ISSUE SLIP

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Preface.

It is proposed to issue from time to time in the present form selections from the correspondence of this office bearing on topics of general interest. The subjects selected are those that have been disposed of by competent authority, and are complete in themselves. Much interesting information is contained in the records of the Revenue department, which, owing to its being mixed up with other subjects, or relating to matters that are still under discussion, and pending the orders of Government or other authority, cannot conveniently be included among printed papers of this kind. But it may often be useful to Government officers, and to other readers of these pages, to find discussed in them official questions of an interesting and important character, in papers not addressed to any particular authority and not involving any official action. It is hoped that this series may become a vehicle for the interchange of opinions and suggestions on all such questions, and with this view it will not be confined to the official correspondence on record in this office, but will include any papers which the Civil Officers of the Punjab may feel disposed to contribute, and which may seem to the Financial Commissioner suitable for publication. It has been suggested also that native officers might contribute interesting papers in vernacular, of which translations could be prepared in this office for publication.

The undertaking is approved and sanctioned by the Honorable the Lieutenant Governor.

J. A. E. MILLER,

Secretary to Financial Commissioner.

FINL. COMMR'S OFFICE,
LAHORE,
The 1*st January* 1868.

No. 1.—FLAX CULTIVATION.

From Major H. P. Babbage, Offg. Deputy Commissioner Goojranwalla, to F. H. Cooper Esquire, C. B., Commissioner and Superintendent Lahore Division, No. 502, dated 21st December 1866.

In answer to your No. 411, dated 19th December 1866, I beg to send copy of my No. 395, dated 2nd October 1866, containing particulars of Flax cultivation in this district during the past season.

2. The statement itself will clearly show to what extent Flax was sown.

3. The produce was serviceable for fibre, and was utilized by the Sealkote Superintendent.

4. The undertaking resulted in loss to the zemindars, as is clearly shown in my letter above cited; that is, they would have gained more by other crops, and do not of their own accord wish to cultivate linseed.

From Major H. P. Babbage, Offg. Deputy Commissioner Goojranwalla, to Lieut. Colonel O. J. McL. Farrington, Offg. Commissioner and Superintendent Lahore Division, No. 395, dated 2nd Cctober 1866.

I have the honor to report for the information of Government the results of the attempt to cultivate linseed during the past season.

2. Two hundred and seventy four acres and three kanals of land were sown with 218 maunds and 33 seers of seed, giving a result as under:—

Locality.		Land sown.	Seed sown.	Produce. Straw.	Produce. Grain.	Value of the produce after deducting seed.			Value of produce per ghomao.			Value of corn.
		G. K.	ms. srs.	Mds.	Mds.							
Goojranwala,	Material,	98-5	70-0	342- 0-0	93-20-0	...	...	...	...	...	...	11 mds.
	Value,	...	...	114- 0-0	467- 6-8	581	6	8	5	13	...	16-8-0
Akalgurh,	Material,	55-1	46-4	340- 3-2	47-19-0	...	...	...	...	...	...	11 mds.
	Value,	...	...	113- 5-6	71- 4-0	184	9	6	3	5	6	16-8-0
Wuzeerabad,	Material,	75-3	70-23	444-25-0	61-22-0	...	...	...	...	...	...	11 mds.
	Value,	...	...	148-2-10	307-13-0	455	15	10	6	9	...	20-1-0
Hafizabad,	Material,	5-0	7-26	60- 0-0	14-28-0	...	...	...	...	...	...	7 mds.
	Value,	...	...	73- 7-6	20- 0-0	93	7	6	18	11	1	10-8-0
Bootala,	Material,	40-2	24-20	106-29-0	36- 0-0	...	...	...	...	...	...	11 mds.
	Value,	...	...	35- 9-0	180- 6-0	215	9	...	5	6	...	16-8-0
Total,	Material,	274-3	218-33	1294-6-0	253- 9-0	...	...	...	...	...	...	10-8-0
	Value,	...	...	484-8-10	1046-7-8	1,531	...	6	5	9	3	16-0-0

3. This shows a return of only Rs. 5-9-3 per acre, not reckoning carriage of produce to Sealkote, where alone it can be sold, whereas the estimated net return of corn per acre is Rs. 16.

From Major T. W. Mercer, Deputy Commissioner Sealkote, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, No. 64, dated 22nd January 1867.

With reference to your No. 4956, dated 19th November last, I have the honor to forward a brief report from the Agent Belfast Flax Company at Sealkote, showing the result of Flax cultivation during the past season.

2. I am fully of opinion that as a large agricultural enterprize, the operations of the Company have been hitherto unsuccessful, and I concur in the views expressed by Mr. Williamson that the system should be entirely changed.

3. It appears to me to be a mistake for Government officials year after year to use their persuasions to induce the people to cultivate Flax.

4. The experiments already made are quite sufficient to show that the cultivation of flax can be made more profitable to the agriculturist than ordinary crops of grain.

5. The cause of the inadequate profits to the zemindar under the present system is the necessity of conveying his produce in unsteeped straw to the factory at a most inconvenient season, and its liability to deteriorate without early steeping before it reaches the factory. A large quantity of the produce is thus annually lost, both to the cultivators and to the Company.

6. I long ago suggested to the Company that in order to extend the cultivation, they must be prepared for a considerable outlay in the erection of steeping vats, and scutching mills in the chief centres of cultivation.

7. Whether the steeping and dressing should be done at the risk and expense of the cultivators is a point which must be determined by the Company.

8. I believe that at first it will be necessary to erect a certain number of mills and vats at the expense of the Company, and that the operations should be superintended by the skilled manipulators already instructed by their Agent's establishment.

9. Mr. Williamson has promised to draw up a detailed scheme for the information of the Company, and I have requested that before it is despatched to Ireland, he will allow me to peruse it, and make any suggestions which may occur to me relative to its practicability, the general interests of the farmers, and the prospects of success to the Company.

10. The vast difference between the profits to the farmers in Duska and Sealkote, owing to the distance which the straw has to be brought, shows at once how vain it is to expect the cultivation to extend under the present system. The immense waste of the straw caused by long exposure can only be obviated by having small factories for steeping and scutching in several places.

11. I believe that the farmers are ready to enter into an engagement to supply *fibre*, if they are assisted by the Company in the erection of vats and mills. They have frequently told me so.

From Mr. J. Williamson, Agent to Flax Company at Sealkote, to Major T. W. Mercer, Deputy Commissioner Sealkote, dated 22*nd January* 1867.

Herewith I beg to offer my opinion regarding Flax cultivation in this country, and the necessary means which ought to be used for its extension and becoming remunerative to all interested.

1*st*. I would suggest that the operations be carried out purely on the same principle as in Ireland, and to have that effected each cultivator would be required to steep his own flax immediately after pulling. I am quite certain this mode would at once arrest the great deficiency in both quantity and quality from long exposure to the intense heat of the sun after being pulled, and before steeping renders the fibre brittle, and thus deteriorates its value in every respect. If what I have stated be carried into effect, and properly managed, I presume the growers would soon find the necessity of taking proper care of it: doubtless it would pay them well.

2. Additional machinery would be required. If proper machinery could not be obtained, let it be hand-scutched. A mill would be required in each district, of circumference, say 10 miles; let each mill be given up to some influential native of his respective district; let that person be paid by the owner of the flax according to the quantity of fibre he gets dressed, so that it would leave some profit for the mill owner, then he would take an interest in the business entrusted to him; occasionally let some efficient person, and one that has a thorough knowledge of the different qualities of flax give them proper instructions how to manage it, and buy the fibre at a fair price according to quality. These few remarks ought to have been adopted years ago. As long as flax cultivation be managed as it is at present, and as it hitherto has been, I defy the business to prosper.

Take another view of the subject: supposing the flax crop at home was managed as it is here; do you think the result would be so beneficial as it is? I would venture to say that it would be much worse than here, and its cultivation would terminate in one year.

I have laid these remarks before the Directors for their consideration. I am surprised that they, the Directors, have not suggested other plans long before this time.

Report of the result of the flax cultivation in the District of Daska.

District.	Acres sown.	Seed sown.		Straw produce.		Seed produce.		Value of straw.			Value of Seed.			Price of seed advanced to sow.			Paid to the farmers for their produce.			Average value per acre.		
	A. R. P.	Mds.	Srs.	Mds.	Srs.	Mds.	Srs.	Rs.	A.	P.	Rs.	A.	P.	Rs	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Duska.	261 0 0	91	28	925	33	276	24	308	8	4	1384	...	...	458	8	...	1234	...	4	4	11	3

Report of the result of flax cultivation in the District of Sealkote.

District.	Acres sown.	Seed sown.	Straw produce.	Seed produce.	Value of straw.	Value of seed.	Price of seed advanced to sow.	Paid to the farmers for all produce.	Average value per acre.
	A. R. P.	Mds. Srs.	Mds. Srs.	Mds. Srs.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Sealkote.	342 0 0	119 28	4112 24	749 22	1371	3747 12 ...	598 8 ...	4520 4 ...	13 3 5

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, to T. H. Thornton Esquire, Secretary to Government Panjab, No. 79, *dated* 12*th February* 1867.

In your letter No. 636, dated 30th November 1866, it was stated that the Hon'ble the Lieutenant Governor required further information regarding the cultivation of flax in Goojranwalla before sanctioning the expenditure of Rs. 500 for prizes applied for.

2. The Deputy Commissioner was accordingly called on for further particulars, and in his reply, No. 502, dated 21st December, to Commissioner Lahore, he furnished a statement which had already passed under notice in this office, and which, though not so complete as might be desired, is herewith submitted.

3. On receipt of the original statement, the Financial Commissioner applied to the Deputy Commissioner of Sealkote for similar information regarding the cultivation in his district. His reply, No. 64, with enclosures, is herewith submitted.

4. From these papers it will be seen that except in the parganah of Sealkote in which the Factory of the Belfast Flax Company is situated, the cultivation of flax does not appear to be remunerative to the zemindars. The Deputy Commissioner accounts for this by the fact that the growers have under existing arrangements to carry the straw unsteeped to the factory at a most inconvenient season, and probably for long distances. The straw is liable to deteriorate unless steeped early, and much of it is lost before it can be utilized.

5. In the Sealkote parganah the average gross proceeds per acre, for straw and seed, deducting the value of seed advanced, amounted to Rs. 13-3-5.

6. In the Duska Tahsil the result was only Rs. 4-11-3.

7. In the Goojeranwalla District, the average for the district was Rs. 5-9-3 per ghomao. In Hafizabad an out-turn of Rs. 18-11-1 was attained, but this was merely on a small plot of 5 acres, and hence does not affect the average.

8. Sanction is solicited to the application for Rs. 500 for prizes made in this office No. 553, dated 7th November.

From T. H. Thornton, Esquire, Secretary to Government Panjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, No. 100, *dated 20th February* 1867.

Reply to his No. 79, dated 12th February, sanctions Rs. 500 being spent in rewards for flax cultivation in the Goojeranwalla District.

No. II.—REGISTRATION OF DEATHS BY PUTWARIES.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 1675, *dated* 31*st December* 1866.

Forwards for opinion of the Financial Commissioner, copy of a letter from the Inspector General of Police, No. 401, dated 10th December, regarding employment of Patwarees in keeping registers of deaths.

From Major G. Hutchinson, Inspector General of Police Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 401, *dated* 10*th December* 1866.

With reference to correspondence ending with your No. 1333 of the 16th October last, on the subject of the attestation of mortality returns by the European officers of police, I have the honor to report that from a perusal of different diaries submitted by police officers, I observe they have attempted to check the returns of deaths by visiting the villages and comparing the statements there elicited with the records of police stations. It is generally found to be quite impossible to obtain from lumberdars and other villagers any statements which are of use to check the figures on record, as the rural population rarely recollect dates, and appear to confuse in their recollection the deaths of one year with those of another. Their idea too of periods of time is extremely vague.

2. Under these circumstances I suggest that village putwarees be directed to keep up registers of deaths in the form given as thana book No. XV in my Circular No. 19 of 1865 (vide page 69 of Volume of Police Circulars). The entries made by the putwarees will occasionally be compared by District Superintendents and Assistant District Superintendents with the police returns compiled from the chowkeedar's reports. It will perhaps for the present be advisable to keep up the double system of record, because if the putwaree were alone relied on, he might intentionally, or from carelessness, neglect to record deaths.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 49, dated 24th January 1867.

In reply to your letter No. 1675, dated 31st December 1866, I am directed to state that in the opinion of the Financial Commissioner the services of putwarees might be turned to account in keeping up registers of deaths for their circles in villages or in townships, the population of which is not above five thousand; although at the same time the district revenue authorities will probably object to the arrangement, on the grounds that putwarees have already quite enough work on their hands. Indeed, formerly in the Jullunder and Hooshiarpore districts, putwarees had to submit annually a census, containing a record of births as well as deaths; but during Colonel Lake's absence in England, when Mr. Melvill acted for him as Commissioner of Jullunder, the submission of this return was dispensed with as unduly burdensome to the putwaree agency. Further, it should be noted that in districts in which a settlement is in progress the services of the putwarees cannot possibly be spared for this duty. Under these circumstances, it will be seen that returns for the entire province cannot be rendered by putwarees, and it would probably be better in the first instance to employ them experimentally in two or three districts, after which, if the measure works well, and leads to any practical benefit, it can be extended to other districts. In some cases a difficulty may be experienced in comparing the police with the putwaree returns, from the boundaries of police stations and purgunnas not being conterminous, but ordinarily they are so.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 213, dated 13th February 1867.

In reply to your letter No. 49, dated 24th ultimo, relative to the employment of putwarees in keeping registers of deaths, I am directed to state that the Hon'ble the Lieutenant Governor agrees to your suggestion, to try the system experimentally in one or two districts.

2. It will be advisable, however, in the first instance, to take the opinion of Commissioners on the subject, in order that the experiment may be tried in districts where Commissioners are favorable to the scheme.

Circular No. 21, *dated 9th March* 1867, *from Secretary to Financial Commissioner Punjab, to all Commissioners and Superintendents Punjab.*

A proposal has been made by the Inspector General of Police, that putwarees should be employed in keeping up registers of deaths in the form now used by the police department, so that one system of registration might serve as a check upon the other.

2. The Financial Commissioner, in communicating his views to Government, recommended that the system be at first tried experimentally in selected districts: this proposal has been approved by Government, but, in order that the scheme may be tried in localities where Commissioners are favorable to it, the Hon'ble the Lieutenant Governor has directed that the opinions of Commissioners be taken. It is therefore requested that Commissioners will give the subject their early consideration, and state their opinion as to what districts the experiment may best be commenced in, and on what principles it should be conducted, after which detailed instructions can be prescribed for the selected districts.

3. In districts under settlement it is not likely that the services of putwarees can be spared for this work, and in all districts the system will doubtless entail upon them some extra labor, but the object is important and an effort should be made to carry it out.

4. In all towns containing above 5,000 inhabitants, it is probably unnecessary and inexpedient to call in the aid of putwarees. It is chiefly to check the information supplied by village chowkeydars that an additional agency is required. But it will be necessary for District Officers to decide in what towns or large villages the putwarees should not be so employed, and from the total of the police returns the number of deaths in these excluded towns or villages will have to be deducted. The experiment may therefore be most conveniently made in exclusively rural districts.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to the Commissioners of Umritsur, Umballa, Mooltan, Jullundhur, Rawul Pindee, and Delhie.—Circular letter No. 3661 *dated* 31*st July* 1867.

The replies to this Office Circular No. 21 of 1867 show that the system

Sealkote.
Loodianah.
Goorgaon.
Montgomery.
Jullundhur.
Shahpore.

of registration of deaths by putwarees may most appropriately be tried experimentally in the districts marginally noted. In three of these districts, Sealkote, Shahpore and Jullundhur, the system has for some time been in operation. In the other three it sh ould now be introduced

2. The following instructions should be borne in mind.

3. The form to be used by putwarees will be found at page 69 of the Police Hand Book, and is here annexed :—

REGISTER OF DEATHS.

1	2	3	4	5	6	7	8	9	10
Year.	Month and date.	City, Town Village or Mohulla.	Name.	Male.	Female.	Age.	Caste.	Cause of death, nature of illness.	Remarks.

The putwarees should not rely on the reports of the chowkeydars alone, but should refer to lumberdars and independent sources of information.

4. Each putwaree should report on all the villages in his circle, and send in his report monthly, direct to the District Superintendent of Police at the sudder station, who will compare the results with those reported by his own subordinates, and where discrepancies occur will institute further enquiries, or refer to the Deputy Commissioner.

5. The Deputy Commissioner will send on the abstract reports as heretofore to the Secretary to Government. The abstract should show two lines of totals, one "as reported by police" the other "as reported by putwarees."

6. In towns containing above 5,000 inhabitants the agency of putwarees need not be employed. The totals of such towns should be deducted from the police returns for each district, before making the comparison between the reports by the police and those by putwarees.

7. Civil officers should examine and compare the returns during their tours through the district; and the Deputy Commissioners concerned are directed to report on the working of the measure in January next.

No. III.—CESS FOR SOCIAL AND SANITARY PURPOSES.

From E. A. Prinsep Esquire, Settlement Commissioner, Amritsur, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Panjab, No. 201, dated 17th April 1867.

I forward original letter No. 29, dated 30th ultimo, from Lieutenant Nisbet, Assistant Settlement Commissioner Goojranwalla, giving cover to a petition presented by a large number of the leading agriculturists of that district, praying that a charge of 1 per-cent might be added to the jumma of the revised settlement in the way of a new cess, to be devoted to purposes of social improvement, as mentioned in the petition, and to request your instructions as to whether Government sees any objections to such an application being favorably received and carried out in the new settlement of isolated districts in this way, when requisitions of this character are put forward.

2. When I was at Goojranwalla on my first visit, I observed there was a desire expressed in these terms in several places, and recently a paper read out at a meeting of the "Anjuman", or local society for social improvements, very much to this effect, and at the close of the meeting I was presented with a similar petition, declaring that it was the universal wish of all the chowdrees and others, that a 1 per-cent should be put on and recognized. I replied that I would take the request into favorable consideration as soon as I was sure it was really approved by all classes high and low.

3. I am disposed to agree with Lieutenant Nisbet in believing, that the movement has been one of a voluntary nature. Major Babbage, the Deputy Commissioner, thinks the same, and that we should acquiesce in the prayer.

4. I suggest then, that the charge be inserted in the new records, and to make sure that every village agrees, I propose to require a separate petition to be given in on plain paper, as the attestation takes place of each village. The parties who agree before Superintendents will be told that the cess will be inserted; those who do not agree, or object out right, of course cannot be ordered to join in the movement which is a good one, and deserves every encouragement. I trust it will meet with your support.

Return of enclosures is requested with your reply.

From R. P. Nisbet Esquire, Assistant Settlement Commissioner Goojranwalla, to E. A. Prinsep Esquire, Settlement Commissioner Amritsur, No. 29, dated 30th March 1867.

I enclose in original, a petition of the leading chowdries of the whole of the Goojranwalla District, praying that the revised jumma at this settlement may be enhanced 1 per cent, the additional rupee to be devoted to the purposes of social improvement mentioned therein, at the discretion of the District Officer. I believe the application to be quite voluntary, and the genuine wish of the people; the Deputy Commissioner has expressed himself as favorable to the proposal. I solicit early instructions as to whether the amount should be entered in the records of this settlement, as realizable with the Government demand. It has occurred to me, that this arrangement might interfere with any new taxation hereafter to be levied for Municipal purposes in this Province, under Act XV of 1867.

From E. A. Prinsep Esquire, Settlement Commissioner Amritsur, to R. P. Nisbet Esquire, Assistant Settlement Commissioner Goojranwalla No. 202, dated 17th April 1867.

Replies to his No. 29, dated 30th ultimo, that Settlement Commissioner accepts the petition of the leading agriculturists in the matter of adding 1 per cent to the jumma as a new cess for measures of social improvement, and agrees to its being carried out at the revised settlement. Only as this is a proposal affecting the interests of one district in an isolated way, and other questions might be thought to arise from it, Settlement Commissioner has referred to superior authority, and recommended that the proposal be favorably considered. On receipt of reply from Financial Commissioner, final instructions will be conveyed. Assistant Settlement Commissioner will inform petitioners to this effect.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 222, dated 3rd May 1867.

I am directed to forward for the orders of His Honor the Lieutenant Governor, a letter No 201, of 17th April 1867, from the Settlement Commissioner with enclosures, relating to a petition preferred by the lumberdars,

zemindars, &c., of the Goojranwalla District, to have a cess of one per-cent on the jumma imposed for purposes of social improvement, namely, the appointment of Hakeems; the establishment of Vernacular schools; the education of Females; and the carrying out of sanitary arrangements.

2. The Financial Commissioner considers that as this petition has been received while a revision of the assessment is going on, it deserves serious and immediate attention.

3. The Financial Commissioner is disposed to think, that a sanitary cess as proposed might be legally taken in Goojranwalla, but if there be any doubt, it might be legalized by the extension of Act II of 1865, (Rural Police, North Western Provinces) to the Punjab, as suggested in your letter No. 1057, of 22nd April 1867, regarding the sanitary cess in Sealkote.

4. An educational cess has long existed, and it is presumed the petitioners refer to other social improvements not already provided for.

5. The 1 per-cent educational cess, was prescribed in this office Circular No. 4, of 18th January 1855, which stated that the system might be introduced wherever the people themselves were willing to agree to it. Other cesses for purposes of social improvement, could probably be imposed in the same way, unless they would interfere with any system of Municipal taxation which may be in contemplation.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 1346, *dated 22nd May* 1867.

In reply to your letter No. 222, dated 3rd instant, I am desired to state, that as the zemindars of Gujranwalla agree to have their jama enhanced by one per-cent, with a view of providing a fund for sanitary and other purposes, and Mr. Roberts considers that the cess thus self imposed will be legal, the Lieutenant Governor sanctions the arrangement.

2. With regard to the proposed extension of Act II of 1865, I am to enquire whether it will interfere with existing arrangements for remuneration of rural Police.

3. The original enclosures of your letter are returned.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to E. A. Prinsep Esquire, Settlement Commissioner, Amritsur,
No. 2715, *dated 7th June* 1867.

With reference to his No. 201, dated 17th April last, forwards for information and guidance, extract para. 1 of letter No. 1346, dated 22nd ultimo, from the Government Punjab, sanctioning the levy of a cess of one per-cent in the Goojranwalla District for social and sanitary purposes.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab,
No. 287, *dated 7th June* 1867.

With reference to para. 2 of his No. 1346, dated 22nd ultimo, states that Financial Commissioner only proposed the extension of Act II of 1865, in case Government should doubt the legality of taking the one per-cent offered by the lumberdars of Goojranwalla for social and sanitary purposes. Whenever that Act is extended to the Punjab, it will doubtless supersede existing arrangements.

No. IV.--HAKEEMI CESS.

Memo. by Major T. W. Mercer, on the system introduced in the Sealkote District for the training and appointment of Hukeems,——25th February 1867.

With reference to Financial Commissioner's Memo. regarding a petition received from Lumberdars of the Sealkote Tahseel, objecting to the mode of appointing Hakeems, and to the system altogether, begs to state that Major Mercer recently held a large meeting to talk over the subject, at which many Lumberdars were present. The system was universally praised. There was not a dissentient voice. Major Mercer feels so certain, that he knows what the general opinion about the system is, that he has no hesitation in saying that this anonymous petition is the production of a few discontented persons who have some personal dislike to the Hakeems. He believes that it comes from the village of Oogookee, in which village there is a personal dislike to the Hakeems. They presented a petition on one occasion, and were told it was optional with them to employ what Hakeem they liked, but that there seemed to be no reason why they should not contribute as their brethren had done to the general system.

The tax levied has been entirely voluntary. The Zaeldars and Lumberdars alone have been employed as the agents for collection. The people are far too independent to submit to an unauthorized tax, unless it was done by general consent.

The Deputy Commissioner has however, seen that there would be difficulty in continuing this system of taxation as a house tax; for although the amount paid per house is literally next to nothing, the collection of it, as is the case with the Chokeedaree tax, entails a great deal of trouble; and the people have themselves proposed that the money should be raised by a *bachh* on the revenue, of one per-cent.

The people fully see the necessity of increasing the number of Hakeems, and thereby reducing their circles and labors, and Major Mercer believes that when this is done, and the Hakeem is seen constantly amongst them, all ground for discontent will be removed.

It can hardly be expected, that any measure of this kind will be introduced without a complaint here and there, but Major Mercer who has been much amongst the people this year, would beg to assure the Financial Commissioner, that the petition presented to him does not represent even a small section of the whole community, and is probably the murmuring of a few discontented and vindictive spirits.

It is well known that they can employ what Hakeem they like, and the new Hakeems are hardly likely to interfere with the others, because they have so much work to do that they beg to have their sphere of labor reduced, and other Hakeems appointed. The new Hakeems were all selected by the people as the best in the district. Those that were not employed under the new system, were far inferior to them, and are jealous of the good fortune of the others, and doubtless put up mischievous people to make complaints.

Major Mercer watches the system very closely, and will not allow even his own predilections to sway him one way or the other, if the system should prove a failure. At present he would venture to call it a complete success, and would solicit the Financial Commissioner to do him the favor, to peruse the report he has forwarded to Inspector General of Dispensaries, through the Commissioner of Umritsur Division, on the subject.

From A. M. Dallas Esquire, Inspector General of Dispensaries Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 303 *of* 27*th March* 1867.

In reference to your No. 1,134 dated 11th current, I have the honor to forward the report referred to, but I beg its very early return, as I shall require it for use in writing my report on the dispensaries for the past year.

2nd. I have only read the report in a hurried way as yet, but it appears an extremely interesting one, and shows that Major Mercer has taken great trouble in the matter.

3rd. I made enquiries myself on my lately visiting Syalkote about the working of the Hakeem scheme, and up to the present time it seems to me

that success has attended the experiment. The only complaint I heard of was, that the circles were too large, and that consequently some of the people never saw the Hakeems; this however, Major Mercer was about to remedy. The only direction from which I think failure may be feared, is the money part of the scheme. The subscriptions are voluntary, and cannot be enforced if any one declines to pay; and I very much doubt the permanency of voluntary subscriptions.

No. V.—COTTON GINS.

From J. A. E. Miller Esquire, Secretary to the Financial Commissioner Punjab, to Captain W. G. Davies, Deputy Commissioner Shahpore,
No. 3,870 *of* 12*th August* 1867.

One of the Lahore Cotton Gins, was with the permission of Government recently made over to you.

I am directed by the Financial Commissioner to request, that you will favor him with a report as to its working.

From Captain W. G. Davies, Deputy Commissioner Shahpore, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab,
No. 563 *of* 2*nd September* 1867.

I have the honor to reply to your No. 3,870 of the 12th ultimo, enquiring into the working of the Cotton Gin made over to this District last year.

2. The gin is a saw gin, and appears to have been made at Dharwar. On its arrival it was set up in a building near the jail, and repeated trials have been made to test its working, at several of which I have been present.

3. As regards the amount of work done, as compared with the common native "Belna," there is little fault to be found with the machine, for with four men working it, two at a time by turns, the gin will during the day clean easily four maunds of cotton with the seed in it; an outturn of about one maund of clean cotton. Whereas one man working without intermission with the native "Belna," can with difficulty get through twelve seers of uncleaned cotton. So that the same labor is, with the aid of the machine, made to go more than three times as far as it would go unassisted.

4. But unfortunately all this is neutralized by the inferiority in quality of the work done by the gin. It has been found that in the process of separating the cotton fibre from the seeds, the saws cut the seeds, and these get so intimately mixed up with the fibre, that it is a matter of the greatest difficulty to separate the two afterwards by the process known as "Peenjna." That whereas the fibre after being separated from the seeds by the native "Belna" only requires to be once subjected to the "Peenjna" process, the cotton which has been cleaned by this saw gin, requires to be twice subjected to that process.

5. Further it has been found, that the *fibre itself is very much cut* in the cleaning process, so that thread spun from it is much inferior in strength to that spun from cotton cleaned by the native "Belna,". Of the two, this is of course the more serious defect in the working of the machine.

6. The consequence of the two defects I have pointed out, is that the machine has been quite discredited in the eyes of the native population, and no one will bring an ounce of cotton to be cleaned by it; and from my own examination of the clean cotton yielded by it, and the thread made from the latter, I am quite satisfied that there are good grounds for the objections put forward.

7. There is no doubt I think, that saw gins are not adapted to the cleaning of cotton, where the fibre adheres so closely to the seeds, as is the case with the cotton of this country. It is probable that a practical Engineer would be soon able to apply the *principle* of the existing native "Belna" to a machine, which, while economizing labor to an extent equal to the saw gin, would be free from the defects I have pointed out.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 488 *of* 16*th September* 1867.

Forwards for information, copy of a letter No. 563 dated 2nd current, from the Deputy Commissioner Shahpore, reporting on the working of the cotton gin made over to his District last year.

No. VI.—Dr. FORBES' LEVER COTTON PRESS.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to C. U. Aitchison Esquire, Deputy Commissioner Lahore, No. 3,890 *dated* 12*th August* 1867.

I am desired by the Financial Commissioner to request, that you will furnish him with a report on the merits of Dr. Forbes' Lever Cotton Press set up in the Hamam at Lahore.

From C. U. Aitchison Esquire, Deputy Commissioner Lahore, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 997, *dated* 15*th August* 1867.

In reply to No. 3,890 of 12th August, I have the honor to state, that in my opinion the Lever Cotton Press is not at all a good one. From what I have observed of its working, its chief defects appear to me to be: 1st. The workmen are in constant danger, as there is no means of stopping the action of the beam in the event of the rope breaking. I was witness to the narrow escape of one of the men on nearly the first occasion that the press was tried.

2nd. The moveable bottom of the press room is constantly getting jammed, as the parallel slides do not work properly.

3rd. There is no means of regulating the pressure, and when the lever is pulled home, the ends of the parallel beams get slightly raised, which throws the whole press somewhat out.

4th. The press room opens only on two sides, and when the cotton is well pressed, it requires great force to remove the bale.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 454 *dated* 2*nd September* 1867.

I am directed to forward for the information of His Honor the Lieutenant Governor, a copy of Deputy Commissioner Lahore's No. 997, dated 15th August, regarding the working of the Forbes' Lever Cotton Press set up

in the Hamam in the city of Lahore. The Financial Commissioner is disposed to concur in the unfavorable opinion of the Press express by Mr. Aitchison.

2. The Financial Commissioner observes from the last printed reports of the Cotton Department in Bombay, that this Press is very generally condemned in that Presidency. It would be desirable to obtain a really efficient Press to exhibit in Lahore, or elsewhere in the Punjab; but it is necessary in the first place, to ascertain what description of press is deemed the best in the opinion of those competent to judge.

3. Hassard's Press is mentioned with approval in some of the Bombay reports, but is said to be expensive.

4. The Financial Commissioner would suggest, that the Bombay Government be asked to supply the requisite information.

No. VII.—STAMPS ON ENGAGEMENTS FOR GOVERNMENT LAND REVENUE FILED IN THE SETTLEMENT RECORDS.

From E. A. Prinsep Esquire, Settlement Commissioner Amritsur, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 74, dated 13th February 1867.

Forwards original letter No. 227 of 6th Instant, from Settlement Officer of Lahore, accompanied by a Memo. recorded by Mr. Aitchison, Deputy Commissioner of that District, for perusal and instructions of Financial Commissioner. Wishes to know, whether it really is absolutely necessary to take the agreements to engage for the settlement of land revenue from the Lumberdars on *stamped paper*.

2. If the view taken by Mr. Aitchison is correct, that the present mode of taking these engagements is so much waste paper, and agreements of this character if unstamped cannot be legally enforced, it is desirable that some specific instructions be issued; for it has been otherwise enjoined to make known the stipulation entered into at this settlement, in regard to the proprietorship of the State in mines that may exist, or may hereafter be found to exist, and it is important that if agreements are to be entered into at this settlement they should be made, and put into such a recorded form, as not to be liable to future doubt or difficulty.

3. As in this case one of the parties is the State protecting its own demands, it appears to the Settlement Commissioner that the Stamp Act was never intended to apply *against* the Government that made the Act. In this sense it may, or ought to be ruled, that such agreements if to be taken at all, should be on *plain paper*, as has lately been ruled with reference to Act VI of 1857.

4. It is evident that the saving clause about the claim of the State to the mines, if entered any where in the new Settlement records, should be made to have its place in that paper which sets forth the terms upon which the new land revenue demand is fixed for the new settlement.

Memo. by C. U. Aitchison Esquire, Deputy Commissioner Lahore.

With reference to the agreements taken by order of Financial Commissioner from zemindars whose lands are taken up under Act VI of 1857, the

Financial Commissioner has just ruled that they may be on plain paper. It is possible that if reference were made with respect to agreements to pay revenue, it might also be ruled that they may be on plain paper.

But to my mind the law is very clear, that if such agreements are taken at all they should be on stamp paper. The agreements to pay revenue create no obligation which is not already imposed on zemindars under the general revenue law, and in that respect it may be a question whether any formal agreements are necessary. But if they be considered to be either necessary or advisable as a precaution, and if it be intended to use them as evidence in any Court of Justice, or as the foundation of any claim or obligation, they ought to be stamped; as they are executed by proprietors of land, and not by any Officer or Agent of Government; and I know of no special exemption in their favour. In my opinion if taken at all, they are waste paper unless stamped.

From L. S. Saunders Esquire, Assistant Settlement Commissioner Lahore, to E. A. Prinsep Esquire, Settlement Commissioner Amritsur, No. 227, dated 6th February 1867.

It has hitherto been the custom in all settlements to take an agreement (Durkhast) from the zemindars to pay the Government revenue fixed. This agreement has always been written on plain paper.

Lately, under orders of the Secretary of State, a further condition has been entered in this paper, declaring that any mines in future discovered on the estates shall become Government property.

It is possible that you may consider it unnecessary to take the agreement to pay the revenue at all, the payment of which no doubt could be enforced without the intervention of such agreement; but Mr. Aitchison, Deputy Commissioner of Lahore, has lately raised the question whether, under the Stamp Act, either or both of these agreements ought not to be on stamp paper.

I have the honor to forward a memorandum written by Mr. Aitchison at my request, showing his opinion on the subject, and would ask you to obtain a distinct ruling on the legality of the question; and I would beg the favor of your giving me any subsidiary orders that may be necessary after this point has been decided.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to W. Chichele Plowden Esquire, Secretary Sudder Board of Revenue North Western Provinces, No.* 1232, *dated* 15*th March* 1867.

A question having been raised as to whether the settlement durkhast has any binding power upon the malgoozar, and if so, whether to render it admissible as evidence in a Court of Law it should not be stamped, I am desired by the Officiating Financial Commissioner to request the favor of an intimation of the Sudder Board of Revenue's opinion on the points above mooted, and of the practice prevailing in the North Western Provinces.

From W. Chichele Plowden Esquire, Secretary to the Board of Revenue N. W. Provinces, Allahabad, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 39 *dated* 27*th March* 1867.

I am directed by the Board of Revenue to acknowledge the receipt of your letter No. 1232, dated the 15th instant, asking for opinion on the questions whether the settlement durkhast has any binding power upon the malgoozars; and if so, whether to render it admissible as evidence in a Court of Law, it should not be stamped.

2. In reply I am desired to state that, the durkhast is merely a written acceptance by the land-holder of the terms offered by the Settlement Officer, under which he is permitted to hold his land.

3. Each mehal is hypothecated (vide Regulation XXXI of 1803.—Preamble) to Government for the land tax assessed upon it, and if the signers of the durkhast fail to make good their engagements, the Government can at once sell their rights in the estate, *without* any intervention of a Court of Law.

4. The durkhast cannot, therefore be said to be binding in the usual acceptation of the word as applied to a contract; for the conditions under which land is held are laid down by the law, and a breach of those conditions entails the forfeiture of the tenure.

5. It is not understood what circumstances would arise as between Government and a malgoozar, which would entail a reference to a Court of Law; but under no circumstances would the durkhast come under the denomination of an agreement within the meaning of the Stamp Law; it is merely a conditional offer or bid, stating what the parties are willing to give for the privilege of holding land.

6. Durkhasts never have been held liable to stamp duty in these Provinces, nor do the Board think that they can be brought within the meaning of any of the documents specified in the Stamp Act.

From H. S. Cunningham Esquire, Government Advocate Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, dated 4th March 1867.

There can I think be no doubt, that where the object of a document is not to impose an obligation, but merely to place on record in a convenient shape, and in a way likely to come home to all parties concerned, the existence of an obligation imposed by the Law, the document in question is not such an agreement as to need a Stamp. The insertion of any provision not already made by the Law would of course place the document on a totally different footing.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to H. S. Cunningham Esquire, Government Advocate Punjab, No. 1,233, *dated* 15th *March* 1867.

Forwards No. 227 of 6th February 1867, from L. Saunders Esquire, Assistant Commissioner of Settlements Lahore, with enclosures: demi-official letter of 13th current, from C. U. Aitchison Esquire, Deputy Commissioner Lahore, and memo. by P. H. Egerton Esquire, Officiating Financial Commissioner Punjab; and requests the favor of a further expression of opinion.

Demi-Official letter, from C. U. Aitchison Esquire, Deputy Commissioner Lahore, to P. H. Egerton Esquire, Officiating Financial Commissioner, dated 13th March 1867.

I quite agree with you that we do ourselves a great deal of harm by taking agreements where no agreements are required. Who ever heard of any person signing an agreement to Government to pay the income tax at the rate at which it was assessed? And why should such agreements be taken in the case of land revenue, any more than in the case of the income tax? Government does not levy the land revenue because the land-holder agrees, or because of the contract, or agreement, which the land-owner signs, but

because Government has a right to levy it. Any agreement such as is usually taken, whereby the landowner engages to pay the revenue assessed regularly and without objection—*Fusl-ba-Fusl*, *Sâl-ba-Sâl*— is simply waste paper and should not be taken. But if it is taken, then, being an agreement executed by the land-owner and not by an Officer of Government, it must by law bear a Stamp, and if it be unstamped, every person who is a party to it is liable to penalty.

Then, as regards the wajib-ool-urz, or as it is now called I believe, the record of village customs—it is obviously no agreement at all, but a mere record of what is at the time believed to be the custom of the village, and to be taken for what it is worth. To my mind the Sudder Board of Revenue are perfectly right in holding, that no condition entered in the wajib-ool-urz at settlement in favour of a privileged cultivator is binding. An agreement to be binding must be *between parties*. The wajib-ool-urz is merely a document signed by the lumberdars; it is not an agreement between them and Government, nor is it an agreement between themselves, *i. e.* between A. on the one part, and B. C. D. on the other; B. on the one part, and A. C. D. &c.; nor is it an agreement between them and any third party; consequently it is not binding either for or against a privileged cultivator. The real use of the wajib-ool-urz is not that of a binding document, but as a piece of most valuable evidence of the status of things at the time it was drawn up; more force than that it has not.

As regards minerals, if Government is entitled to them, or to a royalty on them by the law of the land, a point on which I am not prepared to give an opinion, then an agreement on the subject is useless and injurious, because it weakens the right of Government by raising the presumption that Government would have no right but for the agreement, and that Government could not interfere if the land owners were to refuse to execute the agreement. On the other hand, if Government have *not* a right to the minerals, or a royalty on them by the law of the land, a *general* agreement by the lumberdars at settlement admitting such right will in my opinion confer no right whatever. If in any case it is known that minerals exist in particular lands, or in a particular village, a resignation of them to Government by the proprietors of the soil would probably be valid and good. But a mere indefinite agreement to the effect "that should at any future time coal, or lead, &c., be found in our village, then we shall pay so and so" would be in law at best, of very

doubtful validity. In any case however, such an agreement would require a stamp.

Pottahs such as you describe, specifying the Government juma, and the Government claims of all kinds on the village, would require no stamp; because (leaving out of consideration the exceptional cases of Government being proprietor of the land, and the land being under farm) the pottah is really only a memorandum and is not an agreement or lease, or covenant, or document of the kind requiring a stamp; and even if it were a lease or agreement, still being executed on behalf of Government by a Government Officer, it would be exempt from stamp.

Memo. by P. H. Egerton Esquire, Officiating Financial Commissioner Punjab, dated 15*th March* 1867.

As the stamp law stands, there can be no doubt that *an agreement* executed by the zemindars to pay a certain amount of revenue is *not* exempted from stamp duty, and similarly any agreement regarding mineral produce, would not be valid or admissible as evidence in a Court of Law on plain paper. But it seems to me that it is not necessary to draw out a deed of agreement, but to state *the facts of the tenure* in the form of a record; this record may be signed by the zemindars in token that they were informed of it.

On the other hand, the "*Putta*" or "Pottah" as it is called in Bengal, *is a deed*, and should contain the mutual conditions entered into between the Government on one hand, and the zemindars on the other.

This being executed on behalf of Government by a Government Officer, is exempt from stamp duty under the general exemptions.

A copy of this can be filed with the settlement record, and this copy (under Clause 28 Schedule A,) need not be stamped, as the original required no stamp.

A Court of Justice would probably be satisfied with the mere record first mentioned; and it is seldom that the whole community would venture to keep back their Putta.

The copy kept as a matter of precaution, would (if duly authenticated), I think be valid proof.

From H. S. Cunningham Esquire, Government Advocate Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 45, dated 13th May 1867.

With reference to the question of the necessity of settlement durkhasts being stamped, I beg to state that neither the information I have been able to obtain from Revenue Officials, nor the correspondence that has come to hand since the question was mooted, lead me to alter my opinion that such documents need not be stamped.

2. Some little uncertainty seems to exist as to the precise light in which a durkhast must be viewed. Even in the reply from the Board of Revenue, I find it described in section 2 as, "merely a written acceptance by "the land-holder of the terms offered by the Settlement Officer, under which "he is permitted to hold his land," in section 5 it is "merely a conditional "offer or bid, stating what the parties are willing to give for the privilege of "holding land."

3. This much, however appears certain, that it imposed no fresh obligation beyond what the law of the land has already imposed and is ready to enforce. Such a document probably serves a useful end in impressing the signatories with their responsibility, and puts on record the fact of their having been aware of the arrangement; but as it creates no new legal liability, and confers no new advantage, it seems impossible to make it the subject of a stamp.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to E. A. Prinsep Esquire, Settlement Commissioner Amritsur, No. 2429, dated 22nd May 1867.

No. of 4th March 1867, from Government Advocate.
No. 45 of 13th May 1867, from Government Advocate, to Secretary to Financial Commissioner.

In reply to your letter No. 74, of 13th February 1867, I am directed by the Financial Commissioner to forward for your information, copies of letters as per margin from the Government Advocate, and to intimate that the Financial Commissioner concurs in the opinion that no stamp is needed on the settlement paper known as the durkhast.

The Financial Commissioner however observes, that the right of Government to mines, &c., should not be recorded in this paper, as it is intended merely to show the amount of revenue which the zemindars offer to pay.

No. VIII.—INTEREST OF GOVERNMENT IN MINES & QUARRIES.

From E. A. Prinsep Esquire, Settlement Commissioner Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 429, *of* 30*th July* 1867.

With reference to para. 2 of your letter No. 2429, of 22nd May, I wish to be informed if the right of Government to mines, &c. is not to be recorded in the durkhast or deed of engagement for Government land revenue, in what way, or in what precise form or record forming part of the Settlement Misl, this clause is to be entered as a stipulation made at the time of Settlement.

2. The old wajib-ool-urz is a record that is no longer prepared in the Punjab Settlements, at least not in a form of general proceeding. The several clauses that used to be there entered, which are to be held to be of use, are distributed over several papers, which form part of the settlement file. This distribution is explained in printed settlement paper No. 31, and full reasons for this change are there assigned.

3. All matters bearing on the stipulation under which the jumma is fixed at the revised settlement, are inserted at the back of the durkhast, and then signed by the lumberdars and khewutdars, and Settlement Commissioner is still of opinion, there could be no better place for such a clause reserving the right of Government to mines; as it might afterwards be denied by the people (witness the difficulty now a days about kunkēr proceeds), that any such exemption was understood as the term of the engagement when the leases were taken up.

4. I suggest then, that the plan hitherto adopted may be allowed to stand.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to E. A. Prinsep Esquire, Settlement Commissioner Punjab, No. 3818 *of* 8*th August* 1867.

With reference to your No. 429 of 30th July, I am directed to forward for your information, copies of the letters marginally noted, which will place you in possession of the Financial Commissioner's views regarding the rights of Government in mines, &c.

Government letter No. 368 of 18th June 1867.
Financial Commissioner's reply No. 321 of 28th June 1867.
Government reply No. 405 of 2nd September 1867.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 368, of 18th June 1867.

Returns abstract of weekly proceedings submitted with his No. 279, of 31st May 1867, and with reference to entry No. 64, enquires whether the prohibition of the Financial Commissioner against entering the right of Government to proceeds of, or dues on mines and quarries, is confined to the durkhast, or applies to all the papers of the Settlement Record.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 321 of 28th June 1867.

In reply to your No. 368 of 18th June 1867, I am directed to state that the prohibition extended only to the entry in the darkhast of Government rights in mines, &c., but it appears to the Financial Commissioner that no mention of these rights is necessary in any part of the Settlement record.

2. The Financial Commissioner considers it sufficient, if in accordance with the principle laid down in Book Circular No. 35 of 1864, "the rent of mines existing definitely and tangibly at the time of settlement be treated as an asset of the estate." It would thus form part of the basis of the assessment.

3. During the currency of the settlement, no increased demand by Government in the shape either of rent or royalty can be made.

4. At each revision of settlement the mines then existing, would similarly be treated as assets and taken into account in fixing the assessments.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 504, of 2nd September 1867.

In reply to his No. 321 of 28th June last, states that the interpretation of the Financial Commissioner of the views of Government in regard to its claims on mines and quarries is clearly correct.

No. IX.—LEVY OF DUTY ON ENGLISH COTTON PIECE GOODS.

(NOTE.—Portions of the following correspondence have already been published in the supplement to the *Gazette of India.*)

From T. H. Thornton Esquire, Secretary to the Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 205, *dated* 10*th April* 1867.

I am directed to forward copy of a letter and its enclosure from the Government of India, No. 1731, dated 30th ultimo, and to request that under the orders of the Financial Commissioner, it may be ascertained and reported whether English cotton piece goods are taxed in any of the Municipalities where octroi duties are levied, and if so at what rates; together with any remarks that the Financial Commissioner may consider called for.

From E. H. Lushington Esquire, Secretary to Government of India, Financial Department, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 1731, *dated* 30*th March* 1867.

I am directed to forward a copy of a letter from the Secretary Bengal Chamber of Commerce, representing the expediency of abolishing local taxes on British cotton piece goods, which pay sea customs duty on import; and to request that the subject may be considered and reported on at an early date.

BENGAL CHAMBER OF COMMERCE.

Calcutta 16*th March* 1867.

To

E. H. LUSHINGTON ESQUIRE,

SECRETARY TO GOVERNMENT OF INDIA,

FINANCIAL DEPARTMENT.

SIR,

In the Financial Statement submitted to the Council of the Governor General on 7th April 1864, Sir Charles Trevelyan referred to the various sources from which funds were derived for maintaining roads, improving the sanitary state of towns, assisting education, and promoting every other object of local interest; and made the following remarks on the subject:—

Municipal receipts form another increasing item. The mode of raising the Municipal Funds depends of course upon the Municipalities. In the Punjab and North West, the favorite mode is by an octroi or town duty. Such duties were formerly levied on behalf of the Government, and were abolished thirty years ago in the wake of the transit duties, because they interfered with the free course of the general trade through the principal marts. Since their re-introduction in the shape of a municipal tax, the same symptoms have reappeared. The principle that town duties are a tax on the consumption of the towns for whose benefit they are levied, and that they should on no account be extended to any article belonging to the transit or general trade, ought to be jealously guarded.

2. The soundness of that principle cannot be questioned. Its observance would have afforded satisfaction and encouragement to those who are interested in the trade with the interior of the country, but it has been represented to the Chamber of Commerce, that the imposition of octroi duties materially affects an important branch of that trade.

3. The levy of local tax of 3 per-cent on British cotton piece goods, which pay a custom's duty of 5 per-cent at port of entry, tends greatly to check their importion into provincial markets, and by reweighting them with an octroi duty, places them at a considerable disadvantage in competing with native made cloth, which is unduly fostered at the expense of the imported article.

4. Interruption to the free introduction and general consumption of British cotton goods is thus established, and the traffic in manufactures which contribute so largely to the imperial revenue unfairly restrained.

5. It is therefore the desire of the Chamber of Commerce to see that destructive obstacle removed, and they submit the matter for the consideration of Government with the view to an early abolition of a tax, from the perincious influence of which it is expedient that trade should be permanently relieved.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab No. 325, *dated* 1*st July* 1867.

With reference to your No. 132, of 19th June 1867, I am directed to state that the cause of delay in replying to your No. 205 of 10th April last,

is that some district replies have not yet been received; but as the information already obtained may be of some use, I am directed to forward an abstract of replies, showing the rates of octroi duty levied on cotton goods, both English and native, in 22 districts of the Punjab.

2. It will be observed that the rates vary very considerably, while in the city of Delhie it is reported that no octroi duty is levied at all on English piece goods. Further enquiry is being made on this point.

3. In connection with this subject the Financial Commissioner desires me to point out, that in your Circular No. 26 of 20th May, regarding Municipal taxation, in the concluding portion of para. 6, you have called upon Municipal Committees to revise, and where necessary to readjust, existing tariffs.

4. As the Financial Commissioner is in para. 8 of the same circular appointed the referee in matters connected with Municipal taxation, he is not prepared until the subject has come more fully under his consideration, to offer an opinion as to whether the octroi duty on English cotton piece goods could advantageously be abolished or reduced; but something more of uniformity in the incidence of the tax may reasonably be kept in view, as an object to be aimed at in the revision of Municipal tariffs.

Abstract of replies received to Financial Commissioner's Circular No. 35, *dated* 26*th April* 1867, *calling for information on the subject of the levy of octroi duty on English Cotton Piece Goods.*

Hissar District.—In the towns of this district, octroi is levied at rates varying from 10 annas to 13 annas per-cent on English piece goods. In four of the towns the rate for English and country cloth is the same; but in two towns Bhewani and Hansie, a lower duty is levied on cloth of native manufacture.

Rohtuck.—A duty of 3 pie to the rupee, or Rs. 1-9 per-cent is levied on both English and country cloth in this district.

Sirsa.—A duty of Rs. 1-0 per-cent is levied on both English and country cloth.

Delhie.—No octroi is levied on English piece goods.

Goorgaon.—One per-cent is levied in this district on both English and country cloth.

Kurnaul.—English cotton and other piece goods are taxed at Rs. 1-9 per-cent, and cloth of country manufacture at Rs. 3-2 per-cent.

Jullundhur.—Various modes of levying duty on English piece goods prevail in this district, according to the manner in which the goods are carried, but the average *ad valorem* rate is entered as from 10 annas to 1 rupee per-cent.

Hoshiarpore.—English and country cloth are taxed alike, paying a duty of Rs. 1-9 per cent in the town of Hooshiarpore, and one per cent in the other towns of the district where octroi is levied.

Kangra.—Duty on English and country cloth is levied alike, at rates varying in the different towns from Rs. 0-12-6 to Rs. 2-10 per-cent.

Amballa.—English cotton piece goods and country cloth, are taxed at the same rate in all but one town of this district. The rate of octroi duty varies in the different towns from 8 annas to Rs. 1-4 per-cent. In the town of Pehoa, the duty on country cloth is Rs. 3-8 per-cent, and on English Rs. 1-9 per-cent.

Loodianah.—English and country cotton cloth are taxed alike, the rate being one per-cent on value in Loodiana, and 12 annas per-cent in all other towns.

Mooltan District.—English cotton cloth 10 annas per maund, country 3 annas and 6 pie per maund.

Montgomery.—Rs. 1-8 per-cent for both English and country.

Jhung.—Rs. 1-9-0	do.	do.
Moozuffurgurh.—Ditto	do.	do.

Peshawur.—English 0-3-4 per-cent, country, 0-1-2 per-cent.

Hazara.—	Nil	do.	0-12-0 per-cent.
Kohat.—	Do. Rs. 1-9-0 per-cent		Rs. 1-9-0 per-cent.

Rawulpindi.—English and country cotton cloth are taxed at Rs. 1-9-0 per-cent.

Jhelum.—	Ditto	...	at one per-cent.
Goojerat—	Ditto	...	at 1-9-0 per-cent.
Shahpoor.—	Ditto	...	at one per-cent.

Commissioner intimates that English cotton piece goods are amongst the

chief articles of trade of the city of Rawul Pindee, and to abolish the duty now levied would greatly reduce the Municipal fund of that town; and that the Deputy Commissioner reports the only effect of this tax on English cotton piece goods is to enhance the local price somewhat.

From P. H. Egerton Esquire, Commissioner and Superintendent Amritsur Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 143, *dated* 25*th June* 1867.

With reference to your circular No. 35, dated 26th April last, I have the honor to report on the subject of duty levied on English cotton piece goods, and on cotton cloth of native manufacture.

2. In the city of Amritsur the duty is as follows:—

English piece goods,	..	Rs. 1-12-0 per maund.
		Rs. 1-8 -0 per-cent.

Country piece goods.

Local manufacture,	..	Rs. 0-12-0 per maund.
		Rs. 1-8 -0 per-cent.
From Doab, bleached, Rs. 2 per maund	}	Rs. 1-8 per-cent.
" unbleached, " 1 "	}	

In the towns of the old Amritsur District, the rate of duty is one per-cent for both English and country piece goods.

In Buttala the rate is 0-15-0 per-cent on both; and in other towns lately transferred from Goordaspoor to Amritsur, the rate is 0-10-0 per-cent on both.

3. In the Goordaspoor district an uniform duty of 15 annas per-cent of value on imports, is levied on English and native cotton manufactures in all towns paying octroi.

4. In the towns of the Sealkote district the rate is Rs. 1-9 per-cent on English piece goods, and one per-cent on cloth of native manufacture.

5. Thus it will be seen, that in Sealkote only are English piece goods placed at any disadvantage compared with country manufacture, and this inequality in Sealkote I propose to remedy from the commencement of next year.

6. English piece goods in transit, that is those which are not opened and sold in the town or city, do not pay octroi in that town. I have seen it recently asserted, that there is great practical difficulty in arranging to exempt goods in transit; but I can assert that nothing of the kind is experienced in Amritsur (which is probably the largest emporium in this province); under the management of the present contractor Lala Ameer Chund. He is the brother of one of our largest merchants, and has acquired the respect and confidence of the mercantile community, and in return he relies largely on their probity, and in almost all cases is content to trust their beejucks or invoices, and to levy his octroi in accordance with them.

7. I am inclined to think that this system might with advantage be extended to those places where the want of bonded warehouses is said to be felt; and as the evasion of duty by putting forward a false invoice is probably an offence punishable under the head of cheating, there would be a strong check on mercantile immorality. This system reduces the inconvenience of an octroi tax to a minimum.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 348, *dated* 11*th July* 1867.

In continuation of No. 325, dated 1st current, forwards copy of a letter No. 143, dated 25th ultimo, from the Commissioner Umritsur, reporting on the duty levied in his Division on English cotton piece goods and on cotton cloth of native manufacture.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 396 *dated* 16*th July* 1867.

Reply to his No. 348, dated 11th instant, on the subject of duty levied in the Amritsur Division on English cotton piece goods, requests that the Commissioner of Amritsur be asked to explain in detail the system in force for exempting goods in transit from octroi duty.

From P. H. Egerton Esquire, Commissioner and Superintendent Umritsur Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 173, *dated 26th July* 1867.

In reply to your No. 3475, dated 20th instant, I beg to say that my letter No. 143, dated 25th ultimo, was written under a misimpression.

2. I now find that goods in transit for Peshawur and elsewhere, do not enter the city at all, so that the system here adopted is not a precedent for cities through which the Grand Trunk Road passes.

3. The system adopted in collecting octroi on goods which come into the city, is to accept the Beejuck or Invoice as evidence of the value of the goods and levy octroi accordingly, instead of opening and weighing, measuring or counting the contents of each bale.

From Secretary to Financial Commissioner Punjab, to Secretary to Government Punjab, Docket No. 389—3659, *dated 31st July* 1867.

In reply to his No. 396, dated 16th instant, forwards copy of the above for information.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 384, *dated 11th July* 1867.

With reference to his No. 325, dated 1st instant, forwards copy of a letter addressed from this office to the Government of India, and states that the opinion expressed by Financial Commissioner in the last clause of his 4th para. is quite concurred in by the Lieutenant Governor.

From T. H. Thornton Esquire, Secretary to Government Punjab, to E. H. Lushington Esquire, Secretary to Government of India, Financial Department, No. 383, *dated 11th July* 1867.

In reply to your letter No. 1731, dated 30th March last, I am directed to state that it has been ascertained on enquiry, that an octroi rate of from 10 annas to Rs. 1-9-0, and in one case Rs. 2-10 per cent *ad valorem* on English

price goods is levied as a municipal tax in most of the large towns of the province. The same duty is almost invariably levied on country cloth.

2. The Lieutenant Governor considers that the levy of a moderate duty on such goods when brought into towns for sale or consumption in those towns cannot be objected to, when it is considered that it is out of the proceeds of octroi duties that the police are paid, market places erected, and other improvements effected for the benefit of trade, and the protection of property.

3. The Municipal Committees which impose and administer these duties, have all of them representatives of the trading community, including dealers in English cotton goods as members, and hence the interests of British trade may be considered as duly guarded.

4. His Honor has recently called upon all Municipal Committees to revise their octroi tariffs, and in so doing has impressed upon them the necessity of so regulating the duties as not to interfere with trade.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab,
No. 421, *dated* 12*th August* 1867.

In continuation of this office No. 325 of 1st July 1867, and with reference to your No. 384 of 11th July, I am now directed to submit the further information that has been obtained regarding the octroi duty on English and native cotton piece goods.

2. The Deputy Commissioner Delhi confirms the report already communicated, that no duty is levied on English cotton cloth either in the city or the district of Delhi.

The Commissioner of Derajat states that the following rates are taken in the districts of his Division.

Dera Ismail Khan.

English cotton piece goods, ...	Rs. 2-4 per camel load.
Native, ...	,, 1-4 per do.

Dera Ghazee Khan.

English, ...	,, 1-4 } ½ maund.
Native, ...	,, 0-8 } ½ maund.

Bunnoo.

English,	.. .. ,,	1-0 per camel load.
Native,	.. .. ,,	1-0 per cent.

In Ferozepore the tax is 12 annas per cent on both.

In Goojranwalla Rs. 1-0 per cent on both.

No. 920, dated 22nd July 1867.

The Deputy Commissioner Lahore has submitted a letter and statement, of which copies are annexed, from which it will be seen that English cloth is placed at no disadvantage as compared with that of native manufacture, although the rate in the city of Lahore Rs. 3-2 per cent, is higher than in most other cities. The value of English cloth is shown to have increased largely during recent years, while that of native cloth has decreased. With regard to this the Financial Commissioner observes, that the increase in English cloth in 1866-67 must be in quantity as well as in value, because the price of such cloth was higher during 1864-65 and 1865-66 than in 1866- 67. The decline in native cloth may be partly attributed to the fact that during the last four years the export of raw cotton to Europe has been so great in proportion to the production, that a smaller quantity was available for native manufacture than in former years.

No. X.—IRRIGATION CANALS SHAHPORE DISTRICT.

From the Hon'ble E. L. Brandreth, Commissioner and Superintendent Rawul Pindee Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 198, *dated* 24*th August* 1867.

In continuation of this office No. 2162, dated 23rd August 1865, and previous correspondence, on the subject of formation of irrigation canals in the Shahpore district, I have the honor to forward for information of Financial Commissioner, copy of a letter, No. 527, dated 13th instant, from Captain W. G. Davies, submitting a map of all the canal excavations made in the Shahpore district during the last six years, and reporting on the result of the formation of the canals.

The map is also forwarded herewith.

From Captain W. G. Davies, Deputy Commissioner Shahpore, to the Hon'ble E. L. Brandreth, Commissioner and Superintendent Rawul Pindee Division, No. 527 *dated* 13*th August* 1867.

You are aware that a good deal has been done in the way of canal excavation in this district during the last six years, but the exact *results* of the encouragement, that has been held out for the investment of capital in such undertakings, are not to be found in your office, in a form easy for reference; moreover, this is information, which the Government may like to be placed in possession of, now that measures, connected with irrigation, are the subject of so much discussion and attention. I have therefore had a sketch map and statement drawn out, giving all the necessary details, which I beg to submit with this.

2. From the latter it will be seen that upwards of one hundred and fifty miles of inundation canal have been opened out, during the period under review, and that upwards of twenty thousand acres are irrigated by means of these channels, and this before many of the canals can be said to be in fair working order. Eventually, the area irrigated will, I have no doubt, be three times this amount. The capital expended in these under-

takings cannot have been less than a lac of rupees, calculating at the low average rate of 750 rupees per mile of channel excavated.

3. It will perhaps be said, that the immediate gain, to the State, of Rs. 7,500 a year, is small, with reference to the extent of land irrigated; but it must be borne in mind, that at least two-thirds of the whole length of these irrigation channels, run through estates which have been assessed for fixed terms, the revenue of which cannot therefore be raised till the existing Settlement is revised. The prospective gain from these works will, it is almost needless to state, be very large.

4. As regards their advantage to the people themselves, especially during seasons of drought, such as we have had here during the last two years, I can scarcely speak too strongly. Having witnessed the results myself, especially during my cold weather tour last year, I may say that they were the means of saving the lives of thousands of heads of cattle, and of giving employment and bread to thousands of human beings, who might, otherwise, have been driven to leave the district.

5. With the exception of Nos. 4 and 8 in the list, all these canals have been excavated since I have had charge of the district. I do not mention this to claim any particular credit for the result, but to show that both capital and energy are not wanting among the people, and that all that is required of the local authorities is, to see that both these requisites to success, in these as in all other undertakings, are judiciously applied; all that I have done therefore is to discourage applications when preferred by those who did not in my opinion possess these essentials, and to foster the disposition to expend money in such works on the part of men possessed of capital, combined with energy, local influence, and an honest desire to carry out schemes for reclaiming waste land.

Statement of Inundation Canals lately opened out in the Shahpore District.

No.	Name of Canal.	Length of Canal in miles.		Area irrigated in Acres.	Jumma.	REMARKS.
		Miles.	Chains.			
1	Raneewah Canal, ...	23	22	1,657	1,350	The lease was sanctioned by the Commissioner, in his docket No 527 of the 28th February 1867.
2	Futteh Khan's Canal,...	16	26	1,500	700	Do., in the Secretary to Government's letter No. 175, dated 20th March 1867, to Financial Commissioner Punjab.
3	Sooltan Mahmood's do.,...	10	20	1,985	1,350	Do., ditto, No. 669, dated 21st July 1863, to do. do..
4	Sahib Khan's ditto, ...	22	60	9,057	2,000	Do., ditto, No. 1937, dated 18th December 1860, to do. do.
5	Bhai Khan's ditto, ...	13	...	2,000	600	Commissioner's No. 1443, dated 28th June 1864.
6	Mr. Chill's ditto, ...	29	...	2,476	...	Waste land purchased under the waste land rules.
7	Station ditto, ...	22	...	1,248	1,500	
8	Mr. McNabb's ditto, ...	8	...	1,164	...	These canals run through estates of which the assessment was fixed prior to the opening out of the canals.
9	Saiwal, ditto, ...	13	...	1,355	...	
	Total, ...	157	48	21,482	7,500	

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab,

No. 476, *dated* 11*th September* 1867.

Forwards in original for the information of Government, a docket No. 198, dated 24th ultimo, from the Commissioner Rawulpindee, with enclosures, reporting on the irrigation channels that have been cut from the River Jehlum in the Shahpore district, during the last six years.

2. More information might have given as to the width and depth of the channels, and cost of excavation. However, Mr. Roberts thinks that Captain Davies is entitled to great credit for having so energetically carried out the idea which originated with Mr. D. McNabb.

3. It appears to Financial Commissioner questionable how far private individuals have a right to take cuts from rivers in the way they have done in the Shahpoor district, without paying a water tax to Government, whether their lands are settled for a term of years or not.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 608, *dated* 19*th October* 1867.

I am directed to acknowledge the receipt of your No. 476, dated 11th ultimo, and its enclosed report from the Commissioner Rawulpindee (herewith returned) on the irrigation channels that have been excavated leading from the Jhelum river, in the Shahpoor district, during the last six years; and in reply to state that, in the opinion of the Honorable the Lieutenant Governor, Captain Davies is undoubtedly entitled to great credit for his energetic and successful exertions in this matter, and on several occasions this Government has intimated the sense entertained of them.

2. As suggested by the Financial Commissioner in your second paragraph, more detailed information in regard to these canals is very desirable, and I am to request accordingly that it may be called for and submitted.

3. With reference to your 3rd paragraph, I am to observe that there can be no doubt that the Government has a perfect right to demand water rent from lands irrigated by these canals; and, when definite resolutions shall have been come to in regard to inundation canals and their management—a subject now under consideration in the Irrigation Department—this will be provided for.

4. In this particular case, however, His Honor considers it to have been advantageous that the persons who have formed these irrigation cuts, have been allowed for a time to enjoy the whole water-rent, without interference from Government.

No. XI.—EXAMINATION OF CANDIDATES FOR EMPLOYMENT AS TREASURY AND DISTRICT OFFICE CLERKS.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to C. U. Aitchison Esquire, Officiating Secretary to Government Punjab, No. 609 *dated* 23*rd November* 1867.

I am directed by the Financial Commissioner to submit for information and orders of Government, the following report on the working of the rules for the Examination of Candidates for employment as Treasury and District Office Clerks, prescribed by Notification No. 90 of 13th February 1866.

2. The first examination was held on 12th April 1866, and the second was ordered to be held, where necessary, on 30th May 1867, though in Delhi it appears to have been held on 15th April 1867, in anticipation of orders.

3. Reports were submitted from time to time as to the results of the examination. With a view to the preparation of a general statement of results, a Circular was addressed to Commissioners on 16th September, and the replies are embodied in the statement herewith submitted.

4. It will be seen that in the Umballa, Hissar, Mooltan, Derajat, and Peshawur Divisions, no examination was held this year, as no candidates came forward.

5. In the Delhi, Jullundhur, Umritsur, Lahore and Rawulpindee Divisions, examinations were held, and eight candidates were passed, and received certificates. Only one obtained employment, and that only of a temporary character, in the district office of Jullundhur.

6. The Register kept up in this office shows that there were eight candidates who passed the examination of April 1866, of whom three were in the Delhi Division. In the four Divisions of Umballa, Jullundhur, Umritsur, and Peshawur, there were no candidates reported. Of the 8 who passed, 3 obtained appointments under Government, and one in the Bank of Bengal, and one was employed in a probationary capacity. Of the three first named, two obtained employment in the Educational Department, and only one in a District Office (Delhi) and that only in an officiating capacity as 4th clerk.

7. It will thus be seen that though these examinations have been held for two years, at the cost of some time and trouble on the part of the examiners, the only result, so far as the filling up of vacancies in District and Treasury or Bank Offices, is concerned, has been the appointment of two acting clerks.

The other candidates that have passed have obtained certificates which will exempt them from further examination, and some of them may have been provided for since passing. But one defect in existing arrangements is, that passed candidates have no means of learning what vacancies exist in public offices ; and on the other hand, Deputy Commissioners and others with whom the patronage rests, have no means of ascertaining what passed candidates are available in the province. In practice the system of appointments is probably not very different from what it was before. The wants of both parties are made known by advertisement and private enquiry, and vacancies are filled up according to the exigencies of the moment, without special reference to the rules.

9. To remedy this defect in the system, as it now exists, the Financial Commissioner proposes to circulate among Deputy Commissioners, a list of the passed candidates, in order that they may look them up as occasion arises, and also that Deputy Commissioners should inform this office of vacancies that occur, or are likely to occur, and that this be made known to passed candidates with a view to their applying to the officer concerned.

10. The Financial Commissioner has no wish to interfere in any way with the arrangements of Deputy Commissioners in these matters, and the only object of the suggestion is, that full information should be available to employers and candidates, through the medium of a central office.

11. There remains for consideration the general principle of these examination rules. It is believed that they were originally intended for the Account and Audit Department alone, though the Financial Commissioner is not aware how far they are at present acted up to in that Department. As regards their suitability for district offices, there is probably considerable difference of opinion : some officers consider that as the field whence clerks are to be selected is already so limited, the imposition of examination tests only renders it more so. Clerks must be selected, not merely with reference to such qualifications as are capable of being tested

by an examination, but on other considerations as well, of which each officer must to a great extent judge for himself.

12. If it were possible to hold, in connection with the Educational Department, or some influential examining body, annual examinations, of different standards, and embracing subjects not provided for in the examinations of the Calcutta University, such as those immediately bearing upon office work, to which all comers within certain limitations as to age and character might be admitted, under certificates from Deputy Commissioners and Commissioners, and without reference to any particular class of appointments, but of a nature merely to indicate the general qualifications of candidates for employment in public or private offices, the Financial Commissioner considers that great advantage would result from the measure. The preference that would naturally be given to passed candidates, in the competition for employment, would tend to stimulate practical education, while at the same time the system would not necessitate any interference in the relations between candidates for employment, and those in whom the patronage is vested.

13. The rules now reported on, while falling far short of this wider aim, do not seem to the Financial Commissioner to accomplish even the more limited object for which they were intended : and, considering the very small practical advantage that has resulted from them, and the apparent disinclination there is to act in accordance with them, the Financial Commissioner is disposed to recommend that their operation be discontinued.

From C. U. Aitchison Esquire, Officiating Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Finaancial Commissioner Punjab, No. 28 *dated* 13*th January* 1868.

I am desired by the Hon'ble the Lieutenant Governor to reply as follows to your letter No. 609 dated 23rd November 1867, reporting the result of the examination of candidates for subordinate appointments in Treasuries and English Offices.

2. Until the lists of passed candidates shall have been communicated to District Officers, as proposed by the Financial Commissioner, the Lieutenant Governor is of opinion that it can hardly be said that the

existing system has had a fair trial, and such communication should therefore be at once made, and a further trial of the existing rules made, for another year at all events; as, although the results of the examinations held cannot be considered conclusive as regards all the qualifications required of clerks, they at all events supply a test upon some points of much importance, and hence must have some value.

3. If certificates of a more comprehensive character, yet equally conclusive in regard to all most essential points could be furnished in connection with our Educational system, this would no doubt be a great advantage; and this end, it may be hoped, will be attained ere very long, though at present our educational arrangements in this province have not become sufficiently matured and advanced for the purpose.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to all Deputy Commissioners Punjab.—Circular Memo: No. 312 *dated* 18*th January* 1868.

The accompanying list of candidates who have passed the tests prescribed for Treasury and District Office clerks at the annual examinations of 1866 and 1867 is circulated for information, in order that Deputy Commissioners and other officers in want of clerks may have an opportunity of communicating with those passed candidates who have not yet obtained appointments.

Note.—The list of candidates was circulated to Commissioners and Deputy Commissioners, and need not be republished here.

Rules for the admission and examination of Candidates for the subordinate posts in the Treasury and English Departments of District Offices.

2. The minimum age of admission will be eighteen years.

3. Every candidate must be certified bv competent medical evidence to be of sound bodily health.

4. The respectability of his character must be attested by two trustworthy persons.

5. He must pass a satisfactory examination in—

English orthography and hand-writing, tested by writing from dictation.

English composition.

Arithmetic, up to, and inclusive of, vulgar and decimal fractions.

Reading and speaking the Urdu language.

6. A Committee will meet once a year at the Head Quarters of each Division to hold the examination. The members should ordinarily be the Deputy Commissioner or one of his Assistants, the Treasury Officer, and an officer of the Educational Department where available.

7. The first Examination will be held on the 12th of April 1866.

8. Candidates for employment should send in their names to the Commissioner of the Division in which they reside, or in which they wish to be employed.

9. Candidates who have studied either in Government Schools, or in Aided Schools, will have to furnish certificates that there is a fair chance of their passing the prescribed tests. The certificates must be given either by an Inspector of a Government School, the Principal of a Government College, the Head Master of a Superior Zillah School, or by the Manager of an Aided School or College.

10. Where the Commissioner finds that a candidate has not fulfilled the conditions of Rules 2, 3, and 4, the Examination prescribed in Rule 3 need not be proceeded with.

11. A candidate may pass the examination, and yet there may be no appointment available for him at the time. In such a case he will be furnished with a certificate, in the form given in the appendix, exempting him from any further examination in the event of his applying for any vacancy that may subsequently occur.

12. Candidates who fulfil the conditions of rules 2, 3 and 4, but fail to pass the examination, will be allowed to present themselves again at subsequent examinations.

13. These rules are applicable to candidates for all appointments in the English and Treasury Departments of the District Officers of the Punjab excepting that of Head Clerk.

14. In all examinations held under these rules, the decision of the Committee, if unanimous, will be final; if not unanimous, the Commissioner will decide, and his decision will be final.

15. In future vacancies which may occur, those should be appointed who have passed the prescribed tests; the only exception being made in favor of those who can produce certificates of approved service for two years and upwards.

16. All references, in connection with these examinations, should be made to the Financial Commissioner, who will issue such subsidiary orders as may be called for.

No. XII.—STAMPED RECEIPTS FROM RAILWAY OFFICIALS FOR PAYMENTS OVER 20 RUPEES ON ACCOUNT OF FREIGHT.

Precis.—In a letter No. 425, dated 23rd April 1867, to the address of the Controller Public Works Accounts Punjab, the Executive Engineer Delhi Division raised the question as to whether Railway Station Masters were bound to give receipts for monies paid to them on account of goods carried by Railway, as he required such receipts to append as vouchers to his accounts; and whether such receipts should be stamped or not;—as the East Indian Railway Officials at Delhi considered it unnecessary to grant receipts at all, and only did so when they were written out, and presented to them for signature.

The Controller Public Works Accounts referred the question to the Accountant General North Western Provinces, and stated that he could not discover any clause in the Stamp Act exempting Railway Officials from giving stamped receipts for payments over 20 rupees. The Accountant General in reply suggested that the matter should be referred for the orders of the Financial Commissioner Punjab, and the suggestion was acted on by the Controller Public Works Accounts.

The Financial Commissioner forwarded the papers to the Government Advocate Punjab, for the favor of his opinion. In reply the Government Advocate stated that Section XXIX of the Stamp Act provided that every person receiving payment for any sum of money the receipt for which required a stamp under the Act, should if required give a receipt bearing the proper stamp indicated by the Act, and should bear the expense of furnishing the same, and in case of refusal would be liable to a penalty not exceeding one hundred rupees.

In bringing the circumstance to the notice of the Consulting Engineer Railway Department Punjab, the Financial Commissioner stated that the Railway authorities at Delhi were bound to give receipts for sums above 20 Rs. paid to them if the payer demanded them ; and that such receipts must bear a one anna stamp, the expense of which must be borne by the person receiving the money, and that any person refusing to comply with these requirements was liable to the penalties prescribed by the Stamp Act.

As the point at issue related to the East Indian and not to the Delhi Railway Company, the Consulting Engineer to Government Punjab transferred the case to the Consulting Engineer Bengal.

The Consulting Engineer Bengal referred to the Board of Agency East Indian Railway Calcutta, for information as to the practice in force on the East Indian line in the matter of granting receipts. Mr. Stephenson, one of the Members of the Board, stated that the only persons who required separate stamped receipts for monies paid on freight account were officers in the service of Government, or Agents who required some sort of voucher in support of their accounts, and Station Masters had been instructed to furnish stamped receipts to persons so requiring them. That this was done as a matter of convenience, as money paid across the counter for value received there and then did not in commercial usance involve a receipt of any sort, otherwise it would obviously be necessary to give a receipt for every passenger ticket sold to the public. The Consulting Engineer Bengal, in reply to the Chairman of the Board of Agency, suggested that the instructions given to Station Masters to furnish stamped receipts to persons requiring them should be strongly impressed on them, as a refusal to give a stamped receipt for a sum over 20 rupees involved a possible penalty of 100 Rs. and that giving such a receipt should therefore be looked upon as something more than a matter of convenience.

This correspondence was forwarded by the Financial Commissioner to the Controller Public Works Accounts Punjab, for information and communication to the Executive Engineer Delhi Division.

No. XIII.—DIVERSION OF TRAFFIC FROM THE MULTAN AND BOMBAY ROUTE TO THE CALCUTTA ROUTE.

From Lieutenant Colonel H. Drummond, Consulting Engineer to Government, Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, Punjab, No. 156, *dated* 25*th March* 1867.

Forwards for the information of the Financial Commissioner, copy of No. 464 of 8th March 1867, and enclosure, from the Secretary to Government Bombay to the Under-Secretary to Government Punjab, Public Works Department, Railway Branch—with the request that he will be so good as to ascertain from the Commissioner of Amritsur regarding the alleged diversion of traffic, and at same time favor this office with his own views on the subject.

From the Secretary to Government Bombay, to the Under-Secretary to Government, Punjab, Public Works Department, Railway Branch, No. 464 *dated* 8*th March* 1867.

I am desired by His Excellency the Governor in Council to forward the accompanying extract from a letter from Major Banus, Deputy Consulting Engineer for Railways in Sind, dated 8th February, No. 195 of 1867, relating to the alleged diversion of the traffic from the Indus Valley to the Calcutta route; and to request that the Government of the Punjab will ascertain from the Agent of the Punjab Railway, and from other sources available to them, whether there is any foundation for the assertion that the traffic is diverted in the manner alleged, and favor this Government with any information the Government of the Punjab may be able to procure to enable this Government to reply to a reference from the Government of India on the subject.

Extract from letter from the Deputy Consulting Engineer for Railways in Sind to the Consulting Engineer for Railways Bombay, No. 195 *dated* 8*th February* 1867.

It certainly was my intention in my note to which reference is made by the Government of India to controvert the Agent's statement, that

traffic had been diverted from the Kurrachee to the Calcutta route. I will go further, and assert that there was no foundation for the statement.

On receiving your No. 3375 I at once wrote to the Chairman of the Chamber of Commerce of Kurrachee, and I received the following reply. "In reply to your letter No. 3453 of the 21st instant, I have the honor "to state, the Acting Agent of the Sind Railway Company wrote to the "Chamber on the 16th January last, that he had heard on reliable authority "that large consignments of both cotton and seeds were being diverted "from this (the Indus) route to the route viâ Delhi to Calcutta. Sub-"sequently the Chamber wrote to the Agent of the Punjab Railway "making enquiries on the subject, but through some unknown accident a "reply was not received, though dated 1st June, till after the report of the "Managing Committee was going through the press. In this letter the "Assistant Agent stated that he is not aware of any traffic passing from "Lahore through Umritsur to Calcutta for export.

"The Chamber, however, cannot undertake to say whether there is any "truth in the reports you alluded to; but they are of opinion that, unless "continuous Railway communication with the Punjab is secured, circum-"stances must tend to divert traffic from the Indus whenever the line from "Umritsur to Delhi is completed. It has doubtless come under your "notice that the Native Merchants of Umritsur, as shewn by their address "to Colonel Elphinstone, look with such strong disfavour on the present "mode of communication between their town and Kurrachee, that they "would doubtless avail themselves of the Calcutta route".

I also wrote to the Agent in the following words:—

"In a letter of your's to the Chairman of the Chamber of Commerce, "dated 16th January last, the following statement occurs:—I have heard "on reliable authority that large consignments of both cotton and seeds "are being diverted from this route viâ Delhi to Calcutta, simply in "consequence of the ever varying rates of freight.

"I have the honor to request that you will favor me with further "information on this subject, and that you will let me know where you "obtained this important intelligence. If you can send me copies of "letters from merchants or others who have sent produce to Calcutta, "which they would have sent to Kurrachee had not the Flotilla freights "been variable, I shall be much obliged."

Reply to this letter runs :—" The statement referred to as being made " by me when Acting Agent was made on the authority of the represen- " tative of a house then amongst the largest exporters of oil seeds from " Kurrachee."

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to F. Cooper Esquire, C. B., Commissioner and Superintendent Amritsur Division, No. 1521, *dated 2nd April* 1867.

Forwards in original, to be returned, a docket No. 156, dated 25th *ultimo*, from the Under-Secretary Punjab Government Railway Department, with its annexures, relative to an alleged diversion of traffic from the Indus route to the Calcutta route, and requests he will be good enough to ascertain and report whether the traffic has thus been diverted or not.

From P. H. Egerton Esquire, Commissioner and Superintendent Umritsur Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 132, *dated* 10*th June* 1867.

In reply to his No. 1521, dated 2nd April last, forwards copy of a docket No. 224, dated 4th instant, from Deputy Commissioner Umritsur, and of its enclosure, regarding diversion of traffic from the Indus Valley to the Calcutta route.

From Deputy Commissioner Umritsur to Commisioner Umritsur Division, No. 224 *dated* 4*th June* 1867.

Returns enclosures of Commissioner's No. 173, dated 11th April, and encloses abstract of report of Municipal Committee Umritsur.

Merchandize is sent by rail to Mooltan, and from thence by steamer to Kurrachee and Bombay. This route is still followed. Traders of this place do not send viâ Calcutta to Bombay. Owing, however, to there being no rail from Mooltan to Kotree, great delay and inconvenience is occasioned, and further delay is caused by inefficient arrangements at certain Railway Stations. About this, merchants loudly complain. If this were set right,

and rail opened to Kotree, the traffic on this route would be greater. Each route commands the traffic it formerly did, but no diversion has taken place.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to Deputy Commissioners Delhi and Loodianah, Nos. 3110 *and* 3111, *dated* 1*st July* 1867.

Enquiry has been made by the Bombay Government as to whether there is any reason to believe that trade which hitherto has found its way down to Kurrachee and Bombay by the Mooltan Railway and the Indus has recently, from the opening of the Delhi Railway, from the varying steam freights on the Indus, and from other causes, been diverted to the Calcutta route.

2. The Municipal Committee of Umritsur report that no such diversion has taken place as regards the trade of Umritsur, and that each route still commands the traffic it formerly did.

3. It is possible, however, that though the increased facilities of the Calcutta route have not affected Umritsur, which is the terminus of the Mooltan Railway, they may have affected other places situated between that city and Delhi; and I am accordingly directed to request that you will ascertain from Members of the Municipal Committee, and from intelligent Native Merchants and others in Delhi and Loodiana whether this is the case.

4. The alleged diversion is supposed to have taken place chiefly in the case of cotton and seeds.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to G. Coates Esquire, Ferozepoor, No. 3112, *dated* 1*st July* 1867.

I am directed by the Financial Commissioner to forward a copy of a letter this day addressed to the Deputy Commissioners of Delhi and Loodianah, and to request the favor of your opinion on the subject of the alleged diversion of trade from the Bombay to the Calcutta route.

From Major W. Paske, Officiating Deputy Commissioner Loodianah, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, Punjab, No. 423, dated 6th July 1867.

I have the honor to acknowledge receipt of your No. 3111 of the 1st instant, and as directed therein have made enquiries from the principal merchants here as to whether since the opening of the Delhi Railway the trade of this place has found its way to Calcutta instead of by the old route to Bombay viâ Mooltan and Kurrachee, and find from their report that no such diversion has taken place, and that the former route still commands the traffic it formerly did. They state, however, that last year, owing to the stoppage of goods at Mooltan, a small quantity of cotton was sent to Calcutta by the former route.

From G. H. Coates Esquire, Ferozepoor, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, dated 9th July 1867.

I have the pleasure to acknowledge receipt of your letter No. 3112 dated 1st instant, forwarding copy of a communication addressed to the Deputy Commissioners of Loodianah and Delhi with a view to obtaining from them the information asked for by the Bombay Government.

As the opening of the small section of the Delhi Railway from Meerut to Gazeeabad cannot possibly affect the traffic of cotton and seed by diverting it from the Indus route, I presume you allude to the extension for traffic of the East Indian Railway to Gazeeabad ; and taking this view of your questions, I beg to state that in my opinion no perceptible change has taken place in the course that the traffic of the Loodianah and Ferozepoor districts takes, as far as the above mentioned commodities are concerned, since the opening of direct Railway communication between Delhi and Calcutta.

The produce of the Loodianah and Ferozepoor districts, before alluded to, intended for export, more especially seed, (which is chiefly forwarded from Ferozepoor) has for years found its way to the sea-board down the Sutlej, being shipped in native boats ; and the same may be said of cotton exported from that city.

When the Punjab Railway line between Lahore and Mooltan became available as a means of transport, and the "through traffic" system was introduced, I prevailed upon a number of native merchants to follow my example, and to despatch their produce by booking it through from Raiwind.

The fluctuation of rates of freight however and the delays occurring at Raiwind and Mooltan, to which the goods were subjected, the latter the result of the bad arrangements made for carrying that system out, caused the merchants to prefer reverting to the use of the river direct from Ferozepoor, to that of the railway.

In support of this opinion I need only mention that over 250 native boats laden with seeds, cotton &c. are now on the Sutlej waters, bound for Sukkur and Kotree. I also believe that no effect will be produced on the direction taken by the Ferozepoor traffic even by the opening of the whole line from Delhi to Umritsur.

Suffering considerably from the inconvenience experienced from time to time by the constant changing of rates on the part of the Steam Companies plying on the Indus, and the other evils I have enumerated, I have, in connection with one of the principal firms of Kurrachee, Messrs. Fleming and Co., determined on running two large steamers on the river for the conveyance of my export and import traffic. These vessels have been already ordered, and will I fancy be steaming up the river in the early part of next year.

I omitted to add that unless a Branch of the Railway be constructed from Raiwind to the north bank of the River Sutlej, or more facilities be afforded to the Merchants of this district, the bulk of the export trade will always go down by that river.

From D. Fitzpatrick Esquire, Deputy Commissioner Delhi, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 307—1744, *dated* 21*st September* 1867.

In reply to your No. 3110 dated 1st July, I have the honor to state that, as far as I can ascertain, no such diversion of trade as that you refer to has taken place.

2. No doubt at the time when Indian cotton was in extraordinarily great demand in England, a quantity of cotton, which if it left the country at all in ordinary seasons would have gone by Calcutta was sent by Mooltan; but this is to be attributed to the exceptional and temporary causes then at work, and any apparent falling off in the amount of cotton despatched by Mooltan, as compared with that which comes this way, is due to the cessation of those temporary causes, and not to the superior facilities of transit which have lately become available viâ Calcutta.

From J. A E. Miller, Esquire, Secretary to Financial Commissioner Punjab to Lieutenant Colonel H. Drummond, Under Secretary to Government Punjab, Railway Department, No. 4738 *dated* 30*th September* 1867.

With reference to your letter No. 156 dated 25th March, I am directed by the Financial Commissioner to forward for your perusal the correspondence marginally noted, which seems to show that there has been no material diversion of the traffic of the Mooltan and Bombay route to the Calcutta route, except perhaps for a short time when the price of cotton was unusually high.

Financial Commissioner to Commissioner Umritsur, No. 1521 dated 2nd April 1867.
Commissioner's reply, No. 132 dated 10th June.
Financial Commissioner to Deputy Commissioner Delhi, No. 3110 dated 1st July.
Deputy Commissioner's reply, No. 307 dated 21st September.
Financial Commissioner to Deputy Commissioner Loodiana, No. 3111 dated 1st July.
Deputy Commissioner's reply, No. 423 dated 6th July.
Financial Commissioner to G. Coates Esqr., No. 3112 dated 1st July.
Reply to Do. dated 9th July.

2. The Financial Commissioner observes that the Deputy Commissioner of Umritsur, and Mr. Coates of Ferozepoor, point out that delay and defective arrangements on the Mooltan Railway are complained of by merchants, and tend to diminish the railway traffic.

No. XIV.—RAMPOOR FAIR.

From Colonel R. G. Taylor, Commissioner and Superintendent, Amballa Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 237, *dated* 24*th December* 1867.

Forwards for information copy of No. 1428 of 18th December 1867, and enclosure, from Captain E. P. Gurdon, Officiating Deputy Commissioner of Simla, reporting on the Rampoor Fair held in November 1867.

From Captain E. P. Gurdon, Officiating Deputy Commissioner Simla, to Colonel R. G. Taylor, C. B.—C. S. I., *Commissioner Amballa Division, No.* 1428, *dated* 24*th December* 1867.

I have the honor herewith to forward a return showing the amount and estimated value of merchandize brought to the Rampoor Fair in November 1867.

2. I regret that press of work has somewhat delayed the submission of the return.

3. The total value of merchandize brought to the Fair in 1867 was Rs. 2,02,610-14, as compared with Rs. 2,21,039-2-5 brought in 1866, showing a decrease in aggregate value of Rs. 18,429-1-1.

4. The cash realized by sale, in 1867 was Rs. 69,395-14, whereas in 1866 it was only Rs. 44,056-2-3, being an increase of Rs. 25,339-11-9.

5. The merchandize and cash in 1867 aggregated Rs. 2,72,005-15-4, against Rs. 2,65,095-4-8 in 1866, or an increase of Rs. 6,910-10-8.

6. The traders who attended the Fair in 1867 were 12,408, against 6,985 in 1866, showing an increase of 5,423 in 1867.

7. I enclose for easy reference a comparative statement of quantity and value of goods brought to the Fair in 1867 as compared with 1866.

8. Articles of consumption appear to have risen considerably in value, whilst woollen goods and drugs have materially decreased. Ponies (ghoonts) have considerably fallen off in price, the average not being over

50 Rupees, against 73 rupees in 1866. Possibly this is owing to the high price of grain, together with the increased number of ponies brought to the mart.

9. As a possible cause for decrease in the aggregate value of merchandize brought to the Fair, it may be stated that this year cholera and small pox have raged a good deal in the hills. In the Bussahur State alone some 2000 died of cholera. There was also a good deal of small pox in Kunawur, and the passes beyond the British frontier were closed to prevent the ravages of the disease. Probably also the Palumpoor Fair, and the facilities afforded to it by the British Agent at Leh for import of goods through the Cashmere frontier may not have been without some effect, and may have diverted from the usual entrepôt some of the traders with their merchandize.

10. Upon the whole, taking into consideration the amount of cash purchases and the increased number of traders, and allowing for the injury caused by sickness this year, I think the results of the Fair for 1867 may be regarded as satisfactory.

Statement Shewing merchandize brought to Rampoor Fair on 10th November 1867.

No.	Bhoparees.	Commodity.	ROUTES.																								Rate per Maund.		
			From Kunawur, Illaqua Bussahir, Yarkund, Cheen and Ladakh.						*From Plains, Amballa, Jugadree, Mundee, Sookeit.*						*From Kooloo.*						*From Bussahir.*								
			Quantity.			Estimated Value.			Quantity.			Estimated Value.			Quantity.			Estimated Value.			Quantity.			Estimated Value.					
			M.	S.	C.	Rs.	A.	P.	M.	S.	C.	Rs.	A.	P.	M.	S.	C.	Rs.	A.	P.	M.	S.	C.	Rs.	A.	P.	Rs.	A.	P.
1		Wool, ...	2,026	...	...	40,520	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29	12	...	586	...	...	20	...	...
2		Pushum, ...	1,294	...	...	77,640	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	60	...	...
3		Churrus, Yarkundee, ...	126	...	...	10,080	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	80	...	...
4		Neoza, ...	110	32	...	554	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...
5		Goodma Dhohur Lank,	1,210	...	No.	6,050	...	...	...	...	...	...	...	No.	414	...	...	1,656	...	...	...	...	...	...	...	...	5	ea	ch
6		Cheewur, Yaks' tails, No.	30	...	No.	75	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	8	,,
7		Numda, No.	...	85	No.	212	8	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	8	...
8		Ghoonts, ...	...	75	No.	3,750	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	50	...	...
9		Salt, Sambhur, ...	92	...	...	368	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...
10		Borax, ...	140	32	...	704	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...
11		Rice, ...	...	...	...	...	...	...	254	12	...	794	11	...	57	...	...	178	2	...	47	16	...	148	2	...	3	2	...
12		Attah, Wheat, ...	...	...	...	...	...	...	550	32	...	1,377	...	...	190	..	..	475	...	...	59	14	...	148	6	...	2	8	...
13		Mash, Oorud, ...	...	...	...	...	...	...	90	...	...	281	4	...	48	...	...	150	...	...	17	28	...	55	5	...	3	2	...
14		Bugra, ...	...	...	...	...	..	...	224	...	...	448	...	...	65	...	...	130	...	...	42	39	8	85	15	3	2	...	...
15	12,408	Basmuttee, ...	...	...	...	...	...	...	35	24	...	178	...	...	66	...	...	360	...	...	...	..	...	...	...	...	5	...	...
16		Tobacco, ...	...	...	...	...	...	...	27	8	...	136	...	...	34	...	...	170	...	...	22	13	...	111	10	...	5	...	...
17		Opium, ...	...	...	...	...	...	...	2	...	...	600	...	...	2	32	...	840	...	...	...	24	...	180	...	...	300	...	...
18		Salt, Kattia, ...	...	...	...	...	...	...	32	16	...	81	...	...	18	...	...	45	...	...	...	...	...	...	...	...	2	8	...
19		Goor, ...	...	...	...	...	...	...	139	24	...	872	8	...	6	...	...	37	8	...	...	...	...	...	...	...	6	4	...
20		Ghee, ...	...	...	...	...	...	...	28	28	...	577	...	...	152	...	...	3,040	...	...	25	20	...	510	...	...	20	...	...
21		Oil, ...	...	...	...	...	...	...	43	36	...	548	12	...	20	...	...	250	...	...	3	12	8	41	6	6	12	8	...
22		Jewels, ...	...	...	...	...	...	...	...	...	...	15,525	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23		Vessels, Copper, ...	...	...	...	...	...	...	48	1	...	2,281	8	..	...	...	...	...	...	...	...	...	...	...	...	...	60	...	...
24		Do, Brass, ...	...	...	...	...	...	...	177	18	...	8,872	8	...	...	...	...	...	...	...	...	...	...	...	...	...	50	...	...
25		Do. Bell Metal, ...	...	...	...	...	...	...	42	24	...	2,556	...	...	...	...	...	...	...	...	...	...	...	...	...	...	60	...	...
26		Do. Just, ...	...	...	...	...	...	...	4	4	...	82	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20	...	...
27		Do. Iron, ...	...	...	...	...	...	...	68	4	...	885	4	9	...	...	...	...	...	...	...	...	...	...	...	...	13	...	...
28		Cloth, ...	...	...	...	...	...	...	...	...	...	12,366	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Carried forward, ...				1,39,953	8	...				48,462	7	9				7,331	10	...				1,866	12	9			

No.	Bhoparees.	Commodity.	ROUTES. From Kanawur, Illaqua Bussahir, Yarkund, Cheen and Ladakh. Quantity. M.	S.	C.	Estimated Value. Rs.	A.	P.	From plains, Amballa, Jugadree, Mundee, Sookeit. Quantity. M.	S.	C.	Estimated Value. Rs	A.	P.	From Kooloo. Quantity. M.	S.	C.	Estimated Value. Rs.	A.	P.	From Bussahir. Quantity. M.	S.	C.	Estimated Value. Rs.	A.	P.	Rate per Maund. Rs.	A.	P.
		Brought forward,				1,39,953	8					48,462	7	9				7,331	10					1,866	12	9			
29		Moong, ...	...	...	...	...	...	...	8	16	...	33	10	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30		Salt, Lahoree, ...	...	...	...	...	...	...	28	...	...	196	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31		Huldee, ...	...	...	...	...	...	...	25	8	...	201	9	6	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...
32		Ginger, ...	...	...	...	...	...	...	29	16	...	147	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...
33		Spices, ...	...	...	...	...	...	...	22	16	...	896	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40	...	...
34		Khund, ...	...	...	...	...	...	...	26	32	...	428	12	9	...	...	...	...	...	...	...	...	...	...	...	...	16	...	...
35		Thread, ...	...	...	...	...	...	...	5	16	...	108	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20	...	...
36		Sheerah, ...	...	...	...	...	...	...	24	32	...	62	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	8	...
37		Fruits, ...	...	...	...	...	...	...	11	24	...	232	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20	...	...
38		Shoes, ...	...	...	...	...	...	...	No. 150	...	...	150	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	ea	ch
39		Puttoo, Wool, ...	...	...	...	...	...	...	...	...	...	...	...	...	No.	17	8	712	...	...	No.	23	4	896	...	...	4	d	o.
40	18,408	Kurroo, ...	...	...	...	...	...	...	...	...	...	...	...	...	36	...	...	180	...	...	3	32	...	19	...	...	5	...	...
41		Honey, ...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	50	...	...	7	8	...	90	...	...	12	8	...
42		Wax, ...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	20	...	...	1	24	...	32	...	...	20	...	...
43		Kiltahs, ...	...	...	...	...	...	...	...	...	...	...	...	...	No.	25	0	15	10	...	...	...	...	...	...	...	...	1e	h.
44		Woollen cloth, old, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	No.	22	4	448	...	...	2	d	o.
46		Potatoes, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	24	16	...	61	...	...	2	8	...
46		Jurree dhoop. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	32	...	17	...	...	2	8	...
																											Total Rs		
		Cash, ... {	...	...	...	1,39,953	8	...	...	...	...	50,917	8	7	...	...	...	8,309	4	...	...	...	...	3,429	12	9	2,02,610	1	4
			...	...	...	...	...	...	...	...	...	65,524	2	...	...	...	...	3,050	...	...	...	...	...	821	12	...	69,395	14	...
			...	...	...	1,39,953	8	...	...	...	...	1,16,441	10	7	...	...	...	11,359	4	...	...	..	...	4,251	8	9	2,72,005	15	4

(Signed) E. P. GURDON,

Offg. Deputy Commissioner Simla.

RAMPOOR FAIR.

Comparative Statement Rampoor Fair 1866-67.

Articles.	Increase of, over 1866.						Decrease in 1867.						Prices.					
													Increase 1867.			Decrease. 1867.		
Wool, ...	489	22	...	1,962	4	...	...	...	...	...	...	...	...	...	...	5	...	...
Pushum, ...	449	...	...	10,040	...	...	...	...	...	...	...	...	...	...	...	20	...	...
Neoza, ...	100	32	...	454	...	...	...	...	...	...	...	...	...	...	...	5	...	...
Goodmas and	1,207	N	o.	4,478	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Cneewur, Yak's tails, ...	10	N	o.	45	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Numdas, ...	72	N	o.	167	8	...	...	...	...	...	...	...	...	...	...	...	8	...
Ghoonts, ...	32	N	o.	750	...	...	...	...	...	...	...	...	...	...	...	23	...	...
Jewels, ...	...	...	...	15,525	...	...	...	...	...	...	...	...	...	...	...	16	5	4
Vessels, Brass, ...	142	28	...	6,567	2	8	...	...	...	...	...	...	...	...	...	20	...	...
„ Bell Metal, ...	19	34	...	736	...	...	...	...	...	...	...	...	...	...	...	...	...	...
„ Just, ...	4	4	...	82	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Moong, ...	...	...	...	11	2	7	...	24	...	...	...	...	1	8	...	...	...	...
Salt, Lahoree, ...	28	...	...	196	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Huldee, ...	538	...	...	105	5	6	...	...	...	...	...	...	3	...	...	...	...	...
Ginger, ...	6	16	...	99	8	...	...	...	...	...	...	...	2	8	...	...	...	...
Spices, ...	22	16	...	896	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Khund, ...	26	32	...	428	12	9	...	...	...	...	...	...	...	...	...	...	...	...
Thread, ...	5	16	...	108	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fruits, ...	11	24	...	232	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Honey, ...	1	18	...	42	8	...	...	...	...	...	...	...	2	8	...	...	...	...
Kitabs, ...	250	N	o.	15	10	...	...	...	...	...	...	...	...	...	...	...	...	...
Woollen cloths, old, ...	...	9	...	18	...	...	...	...	...	...	...	...	sa	m	e	...	...	...
Potatoes, ...	24	16	...	61	.	...	...	...	...	...	...	...	...	...	...	...	...	...
Jurree dhoot, ...	6	32	...	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Goor, ...	93	24	...	650	...	...	...	...	...	...	...	...	1	4	...	...	...	...
Churrus, Yarkundee, ...	...	...	...	...	...	...	182	20	...	16,620	...	...	...	...	...	20	...	...
Salt, Sambur, ...	...	...	...	...	...	...	1,108	...	..	3,232	...	...	1	...	...	...	...	...
Borax, ...	...	...	...	...	...	...	1,932	8	...	13,046	...	...	sa	m	e	...	...	...
Rice, ...	...	...	...	...	...	...	843	22	...	1,884	11	...	...	10	...	...	...	...
Atta, Wheat, ...	...	...	...	...	...	...	600	20	...	1,488	12	...	sa	m	e	...	...	...
Mashoorud, ...	...	...	...	...	...	...	760	21	...	1,345	15	3	...	10	...	...	...	...
Bugra, ...	...	...	...	...	...	...	323	14	8	428	1	3	sa	m	e	...	...	...
Basmuttee, ...	...	...	...	...	...	...	40	36	...	32	..	...	1	...	...	...	...	...
Tobacco, ...	...	...	...	...	...	...	36	23	...	182	14	...	sa	m	e	...	...	...
Opium, ...	...	...	...	...	...	...	2	28	..	892	...	...	...	...	...	20	...	...
Salt Kattia, ...	...	...	...	...	...	...	1,063	24	...	2,659	...	...	sa	m	e	...	...	...
Ghee, ...	...	...	...	...	...	...	149	14	8	2,982	...	..	sa	m	e	...	...	...
Oil, ...	...	...	...	...	...	...	78	10	8	614	5	6	2	8	...	...	...	..
Vessels, Copper, ...	...	...	...	...	...	...	17	19	...	2,063	5	4	...	...	...	6	5	4
Do. Iron, ...	...	...	...	...	...	...	23	6	...	255	5	3	...	8	...	...	...	...
Cloth, ...	...	...	...	...	...	...	...	...	...	4,888	7	...	...	...	...	...	...	...
Sheera, ...	...	...	...	...	...	...	18	8	...	45	8	...	sa	m	e	...	...	...
Shoes, ...	...	...	...	...	...	...	...	...	...	425	8	...	...	...	...	...	...	...
Puttoo Wool, ...	...	...	...	...	...	...	No.	40	...	2		...	...	5	4	...	..	...
Kurroo, ...	...	...	...	...	...	...	62	30	...	313	12	...	sa	m	e	...	...	...
Wax, ...	...	...	...	...	...	...	...	6	...	16	12	..	...	...	..	5	...	...
Total, ...	...	...	...	43,687	13	6	...	...	...	53,418	4	7	...	...	...	...	...	...

(Signed) E. P. GURDON,

Offg. Deputy Commissioner.

No. XV.—CATTLE FAIRS.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 488, *dated* 1*st October* 1866.

Your letter No. 944, dated 1st May 1866, in which you allude to the importance attached by His Honor the Lieutenant Governor to Cattle Fairs, as well as communications with local authorities on the subject, have led the Financial Commissioner to consider whether any improvements could be effected in the Rules contained in Book Circular 101 dated 13th December 1859, which were partly based on a letter from Government in the Military Department No. 2949, dated 7th December 1859.

2. The replies received from officers consulted do not bring to light any particular defects in the present system, but they show that the practice in different districts is not uniform, and that a revision of the rules is desirable.

3. The enclosed revised rules are accordingly submitted for the approval of His Honor.

4. It will be seen that the main changes proposed are the following.

5. Under the existing rules, Fairs are allowed in 13 districts only. There seems no occasion to restrict the number. It is therefore proposed that a Fair be allowed in any district with the sanction of the Financial Commissioner.

6. The Horse Fairs, which are under separate management in the Military Department, have been excluded from the operation of these rules.

7. The scale of fees leviable on sales is left to the discretion of Deputy Commissioner, subject to the sanction of Commissioner, provided that 3½ per cent be not exceeded.

8. It is proposed that prizes may be given to the extent of half the gross proceeds, provided the amount does not exceed Rs. 500. In the letter above quoted His Honor authorizes the distribution of the whole proceeds after deducting necessary expenditure, but it is presumed that this refers only to the Fairs at Sealkôt and Deenanuggar. The Fairs at Amritsur

and in the Hissar Division yield a large amount of fees, sometimes as much as 7 or 8 thousand rupees. It is considered that Rs. 500 is ordinarily the largest amount that will be required for prizes at any one Fair.

9. Regarding the question of account, the opinion of the Accountant General has been obtained. He admits the advisability of treating Cattle Fairs in an exceptional manner. There are several reasons against treating the proceeds of Cattle Fairs as a Local Fund, among which may be mentioned that they have always been shown as Miscellaneous Land Revenue in the accounts, and are specially provided for in the returns prescribed by this Office Circular 9 of 1866. Moreover, improvement of the breed of cattle is a question of imperial interest, and seems to pertain more to the Revenue than to the Local Funds Department.

10. It is accordingly proposed that the proceeds should, where necessary, be shown as a Deposit in the Treasury accounts, and that the balance, after deducting prizes and expenses, should be credited to Government as Miscellaneous Land Revenue. This is a slight deviation from the principle which requires all imperial assets to be shown in full, and all expenditure to be shown per contra; but there is good reason for this exceptional course, as the requirements for prizes and expenses cannot always be foreseen, and any difficulty or delay in obtaining the money would cause great inconvenience and interfere with the success of the Fairs. Moreover, the course proposed is in no way different from that which is followed in the case of Revenue Tulabana, and other funds, which are similarly kept in deposit till the balance available for credit to Government can be determined.

11. The Rules contain a provision for the transfer of surplus funds from one district to another, in cases where the establishment of a Fair is desirable but the income will not at first be sufficient for prizes and expenses.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, No. 2533 *dated* 15*th December* 1866.

In reply to your letter No. 488 dated 1st October last, I am directed to state that the Honorable the Lieutenant Governor approves generally

of the proposed revised Rules on the subject of Cattle Fairs, and is glad that the Financial Commissioner has thus turned his special attention to the matter.

2. But with reference to the remarks in your 9th and 10th paragraphs, His Honor is not aware what are the several reasons to which allusion is made as existing against treating the proceeds of Cattle Fairs as a Local Fund; on the contrary, it appears to His Honor that the matter is essentially local in character, though necessarily one in which the Imperial Government must take an interest—as in all that relates to the general welfare of the people.

3. It is a matter in which, the Lieutenant Governor observes, the co-operation of the people should be as largely employed as possible, and this will be greatly facilitated by regarding the proceeds as forming a local fund.

4. If, therefore, the Financial Commissioner is aware of any important reasons to the contrary, His Honor desires to know them; and will be glad also to see any correspondence that has passed with the Accountant General on the subject.

5. Horse Fairs should, His Honor thinks, be entirely omitted from these Rules. Government in the Military Department have taken the initiative in this matter, and have largely supplied Stallions at a heavy cost for first purchase and maintenance; and it appears inconvenient and anomalous to have two classes of Horse Fairs, one connected with Government in the Military Department, and the other not so.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 32 *dated* 16*th January* 1867.

Your letter No. 2533 dated Lahore 15th December 1866, on the subject of Cattle Fairs calls for reply on two points.

2. Under the system which the Financial Commissioner proposes to adopt, expenditure on Cattle Fairs will be adjusted in the same way that expenditure is adjusted from the revenue derived from Dastaks; that is, monies required for prizes and other expenses connected with Fairs will be

paid away by the District Officer on his own authority from the collections realized by fees, and the labour and delay of submitting bills for audit will be saved. If, on the other hand, a fresh local fund is constituted, annual budgets will have to be submitted, bills will have to be prepared and audited, and a good deal of additional trouble will be entailed in keeping up the accounts of these funds. As funds of this kind are not considerable, and if as is desired the effect of the new rules is to give a fresh impulse to Cattle Fairs, there will be little surplus revenue to be carried to the credit of Government, it may be a question whether the simpler system proposed by the Financial Commissioner is not preferable; at the same time it must be admitted that the control will not be so effectual as it would be were the revenue derived from cattle fees formed into a local fund. The Accountant General was consulted on this matter demi-officially, and his demi-official letter is submitted herewith.

3. If His Honor the Lieutenant Governor should decide upon forming a fresh local fund, it is presumed that it will remain under the control of the Financial Commissioner, and not be controlled as other local funds, by the Secretary to Government Department Public Works, and that the Deputy Commissioner will administer it, and not the ordinary Local Committee. Again, in the Circular to be issued from this office, (the draft of which is re-submitted for perusal) the surplus fees derived in one district can be made available for establishing Fairs in new localities where the income from fees is not likely to prove sufficient; such transfers of local funds from one district to another are not allowed by the Department of Public Works, and in this respect the system should be exceptional. Hitherto the Government has made in some districts considerable profits by the establishment of Cattle Fairs. The Financial Commissioner is of opinion that the whole of the money thus obtained should be made available for the purpose of establishing new Fairs or for attracting more people to Fairs already established.

4. With reference to your para. 5, the Financial Commissioner would submit for the consideration of His Honor the Lieutenant Governor that Horse Fairs have been established at only a few localities in the Punjab, which are at such a distance from some of the districts that parties are not likely to attend from those districts; owing to the difficulty of pro-

viding funds it is probable that Government in the Military Department will not establish Horse Fairs in new localities; the Financial Commissioner therefore is of opinion that while officers should be cautioned not to offer prizes for horses in those districts which are in convenient proximity to Mooltan, Amritsur and Rawulpindee, where Horse Fairs will be held in future, a discretion should be vested in them to offer prizes for horses in districts which are at a distance. If however in this respect also His Honor the Lieutenant Governor wishes the proposed rules to be altered, the Circular can be re-cast.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 343, *dated* 8*th February* 1867.

In reply to your letter No. 32, dated 16th ultimo, on the subject of Cattle Fairs (the original enclosures of which are returned) I am directed to state that if the receipts realized from fees levied at these Fairs should be formed into a local fund, the Honorable the Lieutenant Governor concurs in thinking that it should remain under the management of the Financial Commissioner. His Honor cannot suppose that the maintenance of such a fund would impose much extra labor on any one; and this certainly appears to the Honorable the Lieutenant Governor to be the more natural and appropriate arrangement. But if the Financial Commissioner and the Accountant General are of opinion that the arrangement would be a troublesome one, or in any way objectionable as affecting the Account Department, His Honor has no wish to insist upon it, and is prepared to allow the system proposed by the Financial Commissioner to be carried out and acted on.

2. As regards horses, however, His Honor continues to be of opinion that they should be excluded from these arrangements. Where Horse Fairs are established His Honor has no objection whatever to fee being levied on their sale; indeed, he considers this to be very desirable if it is not already done. But these Horse Fairs are now beginning to be largely looked to, as affording the best opportunity for obtaining horses for our Native Cavalry Regiments; and officers specially deputed for this purpose are likely to attend them yearly in increasing numbers, as well

as private individuals from amongst the European and Native gentry wishing to supply themselves. If therefore the number of these Fairs were considerably increased, this object would be in a great measure frustrated to the probable injury of both buyers and sellers.

3. If the Horse Fairs already established appear to be too few in number to admit of colts and fillies from all parts being brought to them, a reasonable increase to the number of places where they shall be held may be found desirable. But the matter should be decided upon in the Military Department, with reference to the above consideration; and under ordinary circumstances, their number should by no means be so great as that of ordinary Cattle Fairs, which are intended to supply the wants of the agricultural community at large.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to L. C. Probyn Esquire, Accountant General Punjab, No. 797 *dated* 16*th February* 1867.

I am directed to forward for the favor of your opinion the papers marginally noted, regarding a proposed revision of the Rules affecting Cattle Fairs and the fees derived from them.

Financial Commissioner's No. 488, dated 1st October 1866, to Government, and Draft Circular.
Government reply No. 2533 dated December 1866.
Financial Commissioner's No. 32 dated 16th January 1867.
Office Memo. dated 10th January 1867
Government reply No. 343 dated 8th February 1867.

2. The chief question remaining to be determined is whether it will be most convenient in practice to keep the fees in deposit, as originally suggested, or to deal with them as a local fund under the management of this office.

3. The Officiating Financial Commissioner will be glad to receive an expression of your views on this point, and any other suggestions you may have to offer on other points.

From L. C. Probyn Esquire, Accountant General Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, No. 9767 *dated* 22*nd February* 1867.

In reply to your No. 797 dated the 16th instant, I have the honor to state, for the information of the Officiating Financial Commissioner,

that in my opinion, unless it could be arranged that the fees derived from Cattle Fairs should be incorporated with some existing local fund, it would be much more convenient, as they are comparatively speaking so small, and as there seems a great probability of, in most cases, the full amount realized being spent, to keep them in deposit.

2. I gather from the correspondence forwarded with your letter under reply that it is not considered desirable to incorporate them with any existing fund. The creation of a new fund, with its expenditure controlled by authorities and under rules, differing from those by and under which existing local funds are controlled, would certainly entail trouble on this office and Treasury Officers. Hereafter, however, should it be found that the income from this source is considerable, and that there is a balance available at the end of the year which it is more desirable to retain for the furtherance of the scheme than to credit to Government, the question of forming a separate local fund might be re-opened.

3. The only objection against these assets remaining in deposit, is that there would be considerable difficulty in maintaining any check over the expenditure; and, practically, I apprehend the rules regarding the transfer of surplus funds to other districts would be found a dead letter.

4. I would however point out that the cost of establishing Fairs &c. appears to be a legitimate charge against the State, and that it would perhaps be more convenient, and more satisfactory to the District Officers concerned, if instead of transferring surplus funds from one district to another, the whole assets of each district were *available* for expenditure in the district up to the close of the year, leaving the cost of establishing new Fairs, in districts where no funds were available, to be charged for against the State in the usual manner.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to all Commissioners and Deputy Commissioners, Punjab, Book Circular No. 7 *dated* 2*nd March* 1867.

The existing Rules on the subject of Cattle Fairs are contained in Book Circular No. 101, dated 13th December 1859. The experience since acquired has shown that the system therein introduced may with advan-

Memo showing the places at which Cattle Fairs are held, and the dates on which they take place.

DISTRICT.	Name of place at which held.	Date.	REMARKS.
Delhi, ...			
* Gurgaon, ...	... ...	... ...	No fairs held.
Karnal, ...			
* Hissar, ...	Town of Hissar, ...	March and September.	
Rohtak, ...	Jabaz Gurh, ...	2nd to 16th April, 2nd to 16th October.	
* Sirsa, ...	Sirsa, ...	August and portion of September.	
	Ellenabad, ...	17th to 28th February.	
Amballa Division,	... ...	... ...	Ditto.
* Jallandar, ...	Jallandar, ...	June.	
Hooshiarpore, ...			
Kangra, ...	... ...	... ...	Ditto.
* Amritsur, ...	Amritsur City, ...	11th April, 6th Novr.	
Sealkote, ...	Baba-ki-Ber, (near the town), ...	During the Dasserah.	
Goordaspore, ...	Deenanuggur, ...	Ditto.	
* Lahore, and Ferozepore, ...	... ...	... ...	Ditto.
* Gujranwalla, ...	Emnabad & Wuzeerabad, ...	First day of Bysakhee.	
* Rawal Pindee division, ...	... ...	... ...	Ditto.
* Mooltan Division,	... ...	... ...	Ditto.
* Dera Ismail Khan,			
Dera Ghazee Khan,	... ...	... ...	Ditto.
Bunnoo, ...	Bunnoo, ...	Once a week.	
* Peshawur, ...			
Kohat, ...			
* Hazara, ...	... ...	... ...	Ditto.

MEMO.—Those marked * are the Districts in which Fairs are prescribed by Circular 101 of 1859; it will be seen that in some of them (e. g. Goorgaon, Lahore, Rawal Pindee, Mooltan, Dera Ismail Khan) no Fairs are held.

No. XVI.—APPOINTMENT OF ZAILDARS AND PUTWAREES IN THE KANGRA DISTRICT.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 422 dated 21st August 1866.

No 1717 dated 30th April 1866 to Commissioner of Settlements.
No. 285 dated 4th May 1866, from do.
No. 2971 dated 12th idem, to do.

I am directed by the Financial Commissioner to submit for consideration and orders the correspondence, in original, marginally noted, in which the questions are raised—First, whether, as in other districts in which Settlement is being carried on under Mr. Prinsep's supervision, a Zaildaree agency shall be constituted in the Kangra district; Secondly, if this is answered in the affirmative, shall the income required for remunerating them be attained by levying one per cent in addition to the revenue already paid by the people, or shall one per cent be deducted from the Government revenue. The Kangra district is the only one in which this question will arise, because in this district revision of records only is being effected, and no revision of assessment is being made by the Settlement authorities as in all other districts in which their operations are being carried on.

2. The Financial Commissioner is of opinion that a Zaildaree agency is peculiarly well adapted to the Kangra district; indeed, in the Kotwals of Noorpoor, the Negees of Koolloo, and in the Chowdrees of other parts of Kangra are to be found agents on whom already devolve functions it is proposed that "Zaildars" should discharge in future. He therefore recommends that such an agency should be constituted. Instead, however, of providing the remuneration which it is proposed to assign them by an additional cess upon the people, as proposed by the Settlement Commissioner, the Financial Commissioner would prefer if it could be arranged that a deduction should be made from the Government revenue, because the people of the Kangra district have already been called upon to pay additional cesses for which they had not engaged at the time of Settlement, such as a road fund cess, and the addition to the Putwaree cess sanctioned in your letter No. 670 dated 9th October 1865. At the same time, the

revenue demand is so moderate in the Kangra district that additional cesses could be levied without hardship if their realization did not involve some breach of faith.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, No. 1175 *dated* 12*th September* 1866.

In reply to your letter No. 422 dated 21st ultimo, I am directed to say that the Lieutenant Governor is not prepared to recommend a reduction of assessment to meet the charge on account of Zaildars, seeing that the assessment of the Kangra district is already very light, and that Government is now incurring additional outlay in the revision of the record of rights.

2. His Honor is very decidedly of opinion however that every effort should be made to have complete arrangements carried out for the appointment of Zaildars with the consent of the people: the small charge which will have to be borne by the people being one which they can easily bear, and the entire pecuniary benefit accruing therefrom being enjoyed by one of their own number and their chosen representative.

3. The Lieutenant Governor believes that an opportunity so favorable as the present will not again occur for selecting the most eligible persons and freely communicating with all classes of the community. So that whether the arrangement can be everywhere fully carried out or not, the requisite selections should certainly be made and the scheme fully matured, the people being given to understand that where it is not fully carried out this will be solely owing to recusance on their part.

4. His Honor fully concurs with the Financial Commissioner in thinking that there is no part of the Punjab where such arrangements are so entirely appropriate. He has every reason to believe that this opinion is fully shared by the Commissioner, Mr. Forsyth, who knows the district intimately; and with his hearty support and that of the Deputy Commissioner, His Honor has little doubt that the general consent of the people may be readily obtained.

5. The original enclosures of your letter are returned herewith.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to E. A. Prinsep Esquire, Settlement Commissioner, No. 4099, *dated* 20*th September* 1866.

With reference to his No. 285 dated 4th May last, forwards for information copies of this office No. 422 dated 21st ultimo to the Government Punjab, and the reply No. 1175 dated 12th current, regarding the appointment of Zaildars in the Kangra district.

From J. B. Lyall Esquire, Settlement Officer Kangra, to E. A. Prinsep Esquire, Commissioner of Settlements Punjab, No. 108, *dated* 10*th May* 1866.

With reference to your No. 286 dated 4th instant, forwarding copy of Financial Commissioner's No. 1717 dated 30th ultimo, I have the honor to enquire whether I am to understand that Government is prepared to sanction the assignment of 1 per cent on the jumma to Zaildars in this district. In other districts under revision of Settlement the Zaildar's percentage was introduced as an item of the Sewai, but as in this district the assessment is not under revision it will have to be given, if at all, out of the jummas. When I came to Kangra in last autumn, I found a general expectation of the appointment of Zaildars; but as I had no information as to the intention of Government, and moreover was not prepared to say whether the Zaildar system was suited to the district, I took great care to hold out no hopes. If Government however will give the one per cent I think the money will be well spent. The hill people are suspicious of strangers, and, not being bound together like the communities in the plains, cannot of their own accord, join for one end or object, but they obey their influential countrymen in a wonderful degree; hence without the headman it is peculiarly difficult to get things done, and with them as a rule, peculiarly easy. In Noorpoor there are already the Kotewals, who prove themselves very useful; many however hold very meagre inams. In Kullu and Plach there are the Negees, who have Lumberdars under them and do Zaildar's work. The Negees and Lumberdars share the 5 per cent between them, and both are often excessively under-paid. In Noorpoor, Kullu and Plach no new offices would have to be created, and in Humeerpoor and other parts of Kangra there are Inamdars who already do all the work of Zaildars in their neighbourhood. Until I am informed of the intention of

Government I cannot make any proposals. I shall of course, as you suggest, do nothing without consulting the Deputy Commissioner and the Commissioner of the Division.

From E. A. Prinsep Esquire, Settlement Commissioner, to J. B. Lyall Esquire, Settlement Officer Kangra, No. 550 *dated* 20*th September* 1866.

With reference to report submitted in your No. 108 dated 10th May last, on the subject of a Zaildaree agency for Kangra district, I have the pleasure to enclose copy of reply No. 4099 dated 20th instant received from Financial Commissioner, together with copies of correspondence marginally noted, containing the orders of His Honor the Lieutenant Governor.

(1). Financial Commissioner's No. 422 dated 21st August to Punjab Government.
(2). Reply of Punjab Government, No. 1175 dated 12th instant.

2. The proposals submitted having been approved by the Lieutenant Governor, you are at liberty to mature your plan for forming the several jurisdictions of this new agency.

3. I think it would be prudent for many reasons to give a new name to the post, such as "Zaildar," instead of perpetuating the old names, Kotwals, Chowdrees, Negees and the like, the very restoration of which in a regularly recognized form, will only now lead to parties coming forward and resting their claims merely on the hereditary basis, and we are all agreed that this consideration should be kept out of view as much as possible.

It would be better to have one name perhaps for the whole district.

4. You will perceive that the 1 per cent remuneration is to be an extra cess, and not an abatement on the existing jumma. This you should make known as early as possible to all classes of land-holders, Europeans and natives.

5. Your arrangements are to be carried out, you will observe in para 2 and at the close of para. 3 of the Secretary's letter, with the consent of the people. I feel sure the English planters will fall in with the propriety of yielding this extra charge, when a measure so beneficial to the country and the administration is involved. It would be as well for you to discuss the matter with them first of all, and, securing their co-

object of this movement might be made known with advantage on the occasion of any meeting of land-holders that you may think proper to convene.

6. When you have made out a general scheme of circles and nominees to these posts, you should be careful to consult the Deputy Commissioner, and give every weight to his wishes and recommendations; and before submitting to me, I should much prefer your placing the papers before Mr. Forsyth, the Commissioner, for approval, who has great knowledge of the leading men of the district, and takes I know a hearty interest in this measure. With the support of the local authorities, I have no doubt you will be able to carry out whatever scheme appears to you to be the most feasible with the consent of the people at large.

7. The amount of remuneration is to be limited to 1 per cent on the jumma, and I trust you will not find it necessary ever to go beyond this rate. The average income of a Zaildar should be from Rs. 150 to 200 per annum, with reference to the most compact system of circles or talluquas that you can form in each pergunnah, after considering the local bearing of each selection.

8. I expect a map and report at the close of proceedings.

From J. B. Lyall Esquire, Settlement Officer Kangra, to E. A. Prinsep Esquire, Settlement Commissioner Punjab, No. 217 *dated* 13*th November* 1866.

I have the honor to acknowledge receipt of your No. 550 dated 28th September 1866, forwarding copy of Punjab Government orders on the proposal for the introduction of a "Zaildaree" agency in the Kangra district.

2. I understand that the 1 per cent Zaildaree fee is only to be imposed with the consent of the zemindars. From what I know of the temper of the zemindars in the matter, and from direct enquiry made in several places many months ago, I am convinced that if it be explained to the zemindars that it rests with them whether the fee be imposed or not, they will universally refuse to impose it. Or, supposing that under considerable official pressure the consent of the zemindars of some

mouzahs was obtained, yet those of others would hold out, and those who had consented would recant directly they saw that the cess was not to be a general one.

3. The fact is that the zemindars of an important part of the district have become accustomed to treat with Government. In the matter of the first negotiations for surrender of waste lands to be sold to tea planters, they shewed that they could be obstinate in refusal. I have heard many of those who then came to terms with Government officers, regret their submission, and say that if they had fully understood their freedom of choice they would have refused as others did.

4. In this district there are no groups of villages owned entirely or mainly by the members of a clan. It would be impossible to select Zaildars who would be looked up to as tribal heads or representatives: even the Lumberdars here up to the present day look upon themselves as Government servants, and not as representatives of the Khewutdars of their villages. Their claim to the office as a general rule rests upon their having served as "Kardars" under former Governments.

The consequence of this state of things is that the ordinary peasant proprietor regards the project of a Zaildaree agency at the most with utter indifference, and would, if free to choose, decline to pay anything towards it.

The Lumberdar class (except in the case of a few individuals who feel tolerably sure of being selected as Zaildars) are opposed to the measure: their circuits in the hills are generally large, their influence great, and they dislike the idea of any Lumberdar of another village being in any way put over them. This feeling shews itself very strongly in the Palum, and other parts where the Lumberdars are as a rule well off and independent, and where no agency resembling that of Zaildars has for a length of time existed. In those parts of the district I believe that the representatives of the villages if convoked and made to understand that the introduction of the measure depended on them, would at once with a feeling of relief record a vote against it.

5. There has been for some years an idea in the district that something was going to be given by Government to the "Sofaid Posh" class, and this Zaildaree scheme is looked upon as continuation of that intention.

To press the zemindars to consent to pay the Zaildaree cess would I apprehend be considered by many as a scheme for satisfying the "Sofaid Posh" class out of the pockets of the rest of the community.

6. Before requesting the assistance of the Commissioner and Deputy Commissioner of the district in procuring the assent of the zemindars, I have thought it right to report to you my conviction that the attempt to gain a general consent will fail if made.

I shall take no action in the matter until I hear from you again. If you think that the attempt should at least be made, I beg that you will advise me how the votes should be taken, and to what extent I may expect the support of the Commissioner of the Division, and Deputy Commissioner of the District.

From J. B. Lyall Esquire, Settlement Officer Kangra, to E. A. Prinsep Esquire, Commissioner of Settlements Punjab, No. 71 *dated* 6*th June* 1867.

In my letter No. 217 of 13th November I reported to you my opinion that it would not be possible to obtain the free consent of the zemindars of this district to the imposition of a cess of 1 per cent on the jumma for the payment of a Zaildaree agency. At Jalundhur in January last the Commissioner of the Division, and yourself, verbally informed me that you agreed in that opinion, but doubted whether an application to Government for payment of Zaildars by grant of a per-centage out of the present jumma would have any chance of success; at the same time you told me to make a further report if any other way of getting the desired result suggested itself.

2. You proposed grants of waste lands to Zaildars. I do not think anything general can be done in this way. Assignments of waste land almost always led to disputes. Government also has waived all right to interfere with waste lands, except for the protection of forest timber. The zemindars would also at once say, as they have often said already, that if Government wants to give anything to Zaildars it should give to them from its own Treasury. In Pergunah Noorpoor, however, perhaps something might be done, not to establish Zaildars but to increase the often very insufficient "inams" already held by the Kotwals, by granting them additional "inams" from forest lands in their ilaquas. The Kotwals

would however have to first obtain the consent of the zemindars of the mouzah in whose bounds the forest lies. In this, in many cases at least, they might succeed, as they are an old established influential and generally popular class, though in a like attempt men appointed in other pergunnahs to the new office of Zaildar would almost invariably fail. I beg however to point out that the appointment of Kotwal is at present considered as hereditary as that of Lumberdar, and by giving forest lands in "inam" this hereditary claim would be strengthened, for no man in the hills would consent to clear and cultivate forest lands on a life tenure only.

3. Another suggestion was that as life tenure maafees lapsed the jummas assessed on them should go as "inam" to Zaildars, instead of being added to the Government rent-roll. I am not able to judge whether this plan is sanctionable.

4. No other scheme has suggested itself to me by which the difficulty could be met in the rest of Kangra proper. I suppose there are technical difficulties in the way, otherwise it does not seem clear why Government, after giving 1 per cent to the Zaildars of the Amritsur Division from the new half assets jummas, should refuse to give anything from present, the two-thirds assets, jumma of this district. It is allowed that a Zaildaree agency would be peculiarly useful in the hills. If it would give a better chance of success, a grant of 8 annas instead of 1 Re. per cent might be applied for. This on the jumma of Kangra proper would amount to about Rs. —— at which price the great advantages of a Zaildaree agency would I think be a cheap purchase. If anything is to be done in the Settlement, orders must be given at once.

5. In Kullu the state of the case is different. The Negees of the Kothees form an agency better adapted to procure the desired ends in that country, than any new Zaildaree agency which could be invented. Ordinarily speaking, the Negees have two or more Lumberdars under them in their Kothee.

The five per cent on the jumma, which in other Tehseels goes to the Lumberdar, is divided in Kullu in the proportion of three or two shares, between the Negees and the Lumberdars, his deputies. As the jummas of the kothees are light, though their areas are usually very large, the pay of the Negees and Lumberdars is generally very small. Both Negees and

Lumberdars are an exceedingly useful body of men: in fact, very little can be done at all in Kullu except through the Negees. An immense deal of work in the way of assistance to the Police, arbitration, making roads and bridges, procuring carriage and supplies for English travellers, &c., is thrown upon them. I have known several cases of Negees and many cases of Lumberdars resigning their appointments on the plea that the work was too hard and the pay too small. I therefore recommend that the rate of the Negees and Lumberdars cess in Kullu be raised from 5 per cent to 6 per cent on the jumma. No objection will I think be made by the zemindars. Besides, Government in the case of the Putwarees' cess in this district, has ruled that established cesses of this nature can be authoritatively increased, when it may seem advisable to do so for administrative purposes. As the new bach, *i. e.* distribution of jumma, is being commenced in Kullu, I hope that you will if possible at once give me authority to raise the rate in anticipation of Government sanction.

From J. B. Lyall Esquire, Officiating Settlement Commissioner, Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, Punjab, No. 583, *dated* 15*th October* 1867.

Secretary to Government, No. 670 dated 9th October 1865, to Financial Commissioner.

Financial Commissioner's No. 4210, dated 16th October 1865, to Settlement Commissioner.

At the commencement of the present revision of settlement of the Kangra district the rate of Putwarees' fees was raised from Rs. 2 to 3-2 per cent on the jumma. The reasons for increase of rate, and the orders of Government, are contained in the correspondence marginally noted. In those orders His Honor the Lieutenant Governor also directed, that an attempt should be made to introduce in Zillah Kangra, the kind of Putwaree agency now in use in Dera Ghazee Khan, viz. Dhurwaees or inferior Putwarees in individual villages, or very small tuppas, and chief Putwarees superintending some 8 or 10 Dhurwaees.

Settlement Officer Kangra, No. 108, dated 10th May 1866, to Settlement Commissioner.

Settlement Commissioner's No. 297, dated 12th May 1866, to Financial Commissioner.

2. Again, to turn to a separate subject, in the correspondence marginally noted it was proposed by the Financial Commissioner, that a Zaildaree agency should be constituted in Zillah Kangra, and paid by an assignment on the Government revenue in the

Financial Commissioner's No. 422, dated 21st August 1866, to Secretary to Punjab Government.
Secretary to Government No. 1175, dated 12th September 1860, to Financial Commissioner.

shape of a per-centage. His Honor the Lieutenant Governor however demurred to such assignment, and directed that the per-centage to go to Zaildars, should be in the form of an extra cess to be imposed with consent of the zemindars.

Commissioner of Settlement, No. 550, dated 28th September 1866, to Settlement Officer Kangra.
Settlement Officer's No. 217, dated 11th November 1866, to Settlement Commissioner.
Settlement Officer's No. 71, dated 6th April 1866, to Settlement Commissioner.

3. With exception of No. 108, of which copy is appended, all this correspondence will be in your office. The letters noted in the margin, copies of which are appended, will explain why the necessary consent of the zemindars has not been obtained, and the appointment of Zaildars in Kangra thereby deferred.

This letter therefore concerns two objects which the Settlement Department have been directed to endeavour to attain in the course of the revision of settlement, Zillah Kangra, viz. 1st, the introduction of the system of a superior and inferior Putwaree agency ; 2ndly, the appointment of Zaildars. After making calculations, I do not think it possible to provide adequate pay for such a Putwaree agency out of the income arising from the present rate of Rs. 3-2 per cent. Again, I have no hope at all of getting the zemindars' consent to the imposition of an extra cess for Zaildars.

If, however, Government will authoritatively raise the rate of Putwarees' fees from Rs. 3-2 to 4 per cent on the jumma (only the present average rate of Putwarees' fees in the Punjab) I think both objects may be satisfactorily attained in the way about to be described.

5. In Noorpoor there are already Kotwals who do Zaildar's work, and hold small inams. In other parts of the district there are Inamdars known as Chowdrees or Mehrs. Where no such Inamdars exist it will generally be found that Mr. Barnes at last settlement rewarded the leading Rajpoots, or Brahmin zemindars of the Chowdree class, for the great assistance they gave him, by making them Putwarees. These men have generally left the ordinary Putwarees' work to be done by substitutes, but have made themselves exceedingly useful in other ways, and have great influence. As the rate of Putwarees' fees was fixed at Rs. 2 per cent, the size of their circles is generally very large, often quite enormous.

6. The leading zemindars in Kangra can all read and write either the Nagree or the Puharee character, some of them can also use the Persian character, and most of them have had their sons instructed in it. At this settlement the maps and khusrahs have been mainly made by the sons of respectable zemindars taken out of our village schools.

7. What I propose therefore, is to make, in the greater part of the district at least, one man perform the duties of both Zaildar and Chief Putwaree, *e. g.* to take Noorpoor, where Kotwals with defined taluquas exist already: here the Putwarees are almost without exception men of the shop-keeper class, very inefficient, and without influence. These men would be reduced to the position of village Dhurwaees, or Likhniaras as they used to be called in some parts of the hills; care being taken to make the change as palatable as possible to present incumbents. Other Dhurwaees would be appointed for other villages in the taluqua, and a proportion of the Putwarees' fees at 4 per cent for the taluqua, varying with circumstances, would go to the Kotwal as Chief Putwaree or Naib Canoongoe, provided that he could write Persian, or would provide himself with a clerk in the shape of some young relation or dependant. Where in one or two cases the Kotwal is a Jagheerdar, and already amply remunerated, the two offices would be distinct, and the Chief Putwaree would be a Naib Canoongoe only.

Again, in the other parts of the district, where no Kotwalees exist, here ilaquas would have to be devised with regard to ancient taluqua boundaries, and then the fittest man for the double office would be appointed. In some taluquas he would be the present Putwaree, in others the present Mehr, in others an Inamdar Chowdree, in others a leading Lumberdar. With the general approval of Government, the Commissioner of the Division, with his great local knowledge, in concert with the Deputy Commissioner and myself, would have no difficulty in carrying out the scheme efficiently in all parts of the district.

8. I have not yet referred to Kullu: there we have the Negees for the Kothees, who fulfil all the duties of head Lumberdars and Zaildars, and generally do part of a Putwaree's work besides. The Zaildaree system is not suited to Kullu, and not required. The Negees and Lumberdars of each Kothee at present share the Pachotra, or five per cent, between them.

Both Negee and Lumberdars are generally miserably under-paid. I beg therefore to urge most strongly that the rate of Negee and Lumberdars pay be raised to 6 per cent on the jumma, for the reasons given in detail in para 5 of my No. 71 to Settlement Commissioner, copy of which is appended. I do not propose any increase to rate of Putwarees' fees in Kullu, as I think I shall be able to meet the requirements in the way of Putwarees in that wild part of the country, out of the 3—2 per cent rate already sanctioned.

9. Lastly, I beg to report that, in anticipation of sanction, I have directed, with regard to villages of Kangra proper, that an additional rate of 14 annas should be entered among the cesses in the new Khewuts now being made out. If Government raises the rate of Putwarees' fees from 3—2 to 4 per cent, then such 14 annas rate will go to make up the Putwarees' cess. If Government declines to raise the rate, then the zemindars will I have no doubt be ready to pay it into a Mulba Fund, to be spent by themselves in any way they may please. If however a few villages object to this, then the amount of the rate can be deducted from the Khewuts without much trouble or difficulty.

In the same way, with regard to Kullu, I have directed enhancement of rates of Negees' and Lumberdars' fees from 5 to 6 per cent. My excuse for taking these steps in anticipation of sanction is that the new bach, or distribution of jumma among the Khewutdars, is now commencing in a great number of villages. When such bach has once been made, and the new Khewuts faired, it causes great trouble and confusion to put on an additional rate of any kind. On my mentioning this scheme to Mr. Forsyth, the Commissioner of the Division, he expressed his approval. I have now however sent him a copy of this letter, and if he has any alterations to suggest he will no doubt communicate them to you.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 566 dated 30th October 1867.

With reference to your letter No. 1,175 dated 12th September 1866, of which a copy was forwarded to the Settlement Commissioner, I am now directed to forward for the orders of Government a further communication from that officer, No. 583 dated 15th October, with enclosures, regarding the appointment of Zaildars and Putwarees in Kangra.

2. The orders of Government were that an effort should be made to effect the appointment of Zaildars, and to remunerate them by means of a small cess levied with the consent of the people. Mr. Lyall, as Settlement Officer of Kangra, points out at some length in these papers the difficulties in the way of such a course; and in his No. 583 dated 15th October, as Officiating Settlement Commissioner, he proposes another arrangement to effect the object in view, and at the same time to introduce into the district a system of Putwarees and Dulwais, as has been done with such good effect in Dera Ghazee Khan.

3. Mr. Lyall's proposal is to raise the rate of Putwarees' fees from Rs. 3-2 to 4 per cent, to make, in the greater part of the district, one man perform the duties of Zaildar and Chief Putwaree, to convert most of the existing Putwarees into Dulwais, or Village Accountants, to appoint other Dulwais for other villages, to remunerate the Chief Putwaree, who would in most cases be a Zaildar as well, with a proportion of the enhanced Putwarees' fees, except where he is a Jagerdar already. In Noorpoor taluquas with defined boundaries exist already, each with a recognized Chowdree, or Kotwal, who would usually be appointed under the proposed system to the double office of Zaildar and Chief Putwaree. In other parts of the district similar sub-divisions would be formed in accordance as far as possible with ancient taluqa boundaries, and suitable men would be appointed to the office.

4. With regard to Kullu a somewhat different arrangement is necessary. The Negees and Lumberdars of Kothees perform the duties of head Lumberdars and Putwarees, and divide the puchotra between them; but as the remuneration is insufficient, Mr. Lyall proposes that the rate be raised from 5 to 6 per cent.

5. In anticipation of sanction, Mr. Lyall has recorded the enhanced rates of both Putwarees' and Lumberdars' fees in the Settlement papers, as it would have been inconvenient to do so at a subsequent stage.

6. I am directed to state that Mr. Roberts entirely concurs in all Mr. Lyall's proposals, the arguments in favor of which he considers conclusive, and as it appears that Mr. Forsyth, the Commissioner of the Division, has already given his verbal assent to the arrangements, Mr. Roberts strongly recommends their being sanctioned by Government, and the Lum-

berdaree cess in Kullu, and the Putwaree cess in the rest of the district being raised to 6 and 4 per cent respectively.

From C. U. Aitchison Esquire, Officiating Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, No. 1,762 *dated* 5*th December* 1867.

I am directed to return the correspondence regarding Zaildars and Putwarees in the Kangra district, received with your letter No. 566 dated 30th October last, and in reply to state that, assuming that the arrangement has been acceded to by the Commissioner, the Hon'ble the Lieutenant Governor entirely approves of and sanctions Mr. Lyall's proposals, and considers that officer entitled to great credit for the mode in which he has taken up and dealt with the subject.

2. The vast importance of raising up a local and indigenous agency of a really efficient character, to assist the officers of Government in the administration of villages affairs, cannot, His Honor observes, be doubted; and the Lieutenant Governor will be quite prepared to supplement the emoluments that may now be provided, where these may appear inadequate, by adding thereto the amount of inam or zemindaree grants that may from time to time fall in, in such mode and to such extent as may be determined on in communication with the local officers.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to E. A. Prinsep Esquire, Settlement Commissioner Punjab, No. 6,352 *dated* 18*th December* 1867.

Forwards for information copy of above letter No. 1762 of 5th December 1867 from Secretary to Government Punjab, in reply to No. 583 dated 15th October 1867.

No. XVII.—MERCHANDISE EXPORTED AND IMPORTED THROUGH LAHOUL.

From Colonel R. Young, Officiating Commissioner and Superintendent Jalunder Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 23 *of* 21*st January* 1868.

Forwards for publication in the Gazette, the annexed copy of a docket from Deputy Commissioner Kangra, and of Table of Merchandise exported and imported through Lahoul.

From Major E. H. Paske, Deputy Commissioner Kangra, to Colonel R. Young, Officiating Commissioner and Superintendent Jalunder Division, No. 32 *of* 18*th January* 1868.

Table of Merchandise exported and imported through Lahoul, by the Lahoul and Bara Lacha road in 1867, from statistics taken at Kyelung in Lahoul.

The above prepared by Mr. Rivaz, Assistant Commissioner, from returns submitted in the vernacular by the Negi of Lahoul, is submitted for information. Mr. Rivaz expresses his belief, and the Deputy Commissioner quite agrees with him, that the Returns submitted by the Negi show but a portion only of the imports and exports through Lahoul. This is the first year, however, in which any attempt has been made to secure trade statistics in Lahoul, next year the returns will, it is hoped, be more reliable.

Table of Merchandise

Table of Merchandise exported and imported through Lahoul, by the Lahoul and Bara Lacha road in 1867, from statistics taken at Kyelung in Lahoul.

I. Exports.

Name of Article.	Quantity.	Whence exported.	Destination.
English Cloth, ...	3 pony loads, ...	Hoshiarpoor, ...	Ladakh.
Do., ...	2 do., ...	Do., ...	Yarkund.
Do., ...	12 do., ...	Umritsur, ...	Ladakh and Yarkund.
Do., ...	4 do., ...	Dhurmsala, ...	Ladakh.
Do., ...	2 do., ...	Mundee, ...	Do.
Do., ...	8 do., ...	Kulloo, ...	Do.
Do., ...	5 do., ...	Kangra and Kulloo,...	Do.
Country Cloth, ...	2 do., ...	Calcutta, ...	Yarkund.
Do., ...	10 do., ...	Umritsur, ...	Ladakh.
Do., ...	2 do., ...	Do., ...	Ladakh and Yarkund.
Do., ...	7 do., ...	Kangra, ...	Ladakh.
Do., ...	1 do., ...	Dhurmsala, ...	Do.
Do., ...	5 do., ...	Kulloo, ...	Do.
Silk (manufactured),...	2 do., ...	Umritsur, ...	Ladakh and Yarkund.
Tanned leather, ...	19 do., ...	Kangra, ...	Ladakh.
Do., ...	24 do., ...	Do., ...	Ladakh and Yarkund.
Do., ...	2 do., ...	Do., ...	Yarkund.
Do., ...	14 do., ...	Dhurmsala, ...	Ladakh.
Tea, ...	46½ maunds, ...	Calcutta, ...	Yarkund.
Do., ...	30 seers, ...	Dhurmsala, ...	Ladakh.
Tobacco, ...	35¾ maunds, ...	Do., ...	Do.
Mangoe pickle, ...	1 pony load, ...	Do., ...	Do.
Mangoe preserve, ...	1 do., ...	Do., ...	Do.
Wheat, ...	130 maunds, ...	Kulloo, ...	Ladakh,
Barley, ...	168 do., ...	Do., ...	Do.
Rice, ...	2,425 do., ...	Do., ...	Do.
Oil, ...	42 do., ...	Do., ...	Lahoul,
Goor, ...	7½ do., ...	Do., ...	Do.
Sugar, ...	55½ do., ...	Kangra and Kulloo,...	Ladakh.
Do., ...	42 do., ...	Kulloo, ...	Do.
Kangra Sugar candy,	5 do., ...	Do., ...	Ladakh.
Black Pepper, ...	17½ do., ...	Umritsur, ...	Do.
Do., ...	7½ do., ...	Do., ...	Ladakh and Yarkund.
Do., ...	45 do., ...	Hoshiarpoor, ...	Ladakh.
Do., ...	2½ do., ...	Do., ...	Yarkund.
Do., ...	2½ do., ...	Mundee, ...	Ladakh.
Do., ...	2½ do., ...	Kangra, ...	Do.
Do., ...	25½ do., ...	Do., ...	Ladakh and Yarkund.
Do., ...	18½ do., ...	Kangra and Kulloo,...	Ladakh.
Do., ...	7 do., ...	Kulloo, ...	Do.
Long Pepper, ...	17½ do., ...	Umritsur, ...	Do.
Do., ...	7½ do., ...	Do., ...	Ladakh and Yarkund.
Do., ...	12½ do., ...	Hoshiarpoor, ...	Ladakh.
Do., ...	15 do., ...	Kangra, ...	Do.
Do., ...	10½ do., ...	Kulloo, ...	Do.
Cloves, ...	17½ do., ...	Umritsur, ...	Do.
Do., ...	7½ do., ...	Do., ...	Ladakh and Yarkund.
Do., ...	12½ do., ...	Hoshiarpoor, ...	Ladakh.
Do., ...	2½ do., ...	Do., ...	Yarkund.
Do., ...	2½ do., ...	Mundee, ...	Ladakh.
Do., ...	54 do., ...	Kangra, ...	Do.
		...	Do.

Table of Merchandise.—(Concluded.)

Name of Article.	Quantity.	Whence exported.	Destination.
Nutmegs, ...	7 maunds, ...	Kangra, ...	Ladakh.
Dry Ginger, ...	30 do., ...	Umritsur, ...	Ladakh and Yarkund.
Do., ...	2½ do., ...	Hoshiarpoor, ...	Ladakh.
Do., ...	61 do., ...	Kangra and Kulloo, ...	Do.
	II. IMPORTS.		
Ponies, ...	7 ...	Ladakh, ...	Kulloo.
Do., ...	50 ...	Yarkand, ...	Do.
Wool, ...	938 maunds, ...	Ladakh, ...	Do.
Do., ...	325 do., ...	Do., ...	Lahoul.
Do., ...	650 do., ...	Lahoul, ...	Kulloo.
Woollen Cloth, ...	122 do., ...	Ladakh, ...	Do.
Pushm, ...	85 do., ...	Do., ...	Do.
Salt, ...	1,425 do., ...	Do., ...	Do.
Churrus, ...	752 do., ...	Yarkand and Ladakh,	Do.
Borax, ...	2,380 do., ...	Ladakh, ...	Do.
Garlic, ...	24½ do., ...	Lahoul, ...	Do.
Fruits, ...	24½ do., ...	Ladakh, ...	Do.
Aloes, ...	22½ do., ...	Lahoul and Ladakh,	Do.

Abstract

Abstract of the above Statistics, showing the total amount of each article of Export and Import.

I. Exports.

English cloth, ...	36 pony loads.
Country cloth, ...	27 do.
Silk (manufactured), ...	2 do.
Tanned leather, ...	59 do.
Tea, ...	76½ maunds.
Tobacco, ...	35¾ do.
Mangoe pickle and preserve, ...	2 pony loads.
Grain, ...	2,723 maunds.
Oil, ...	42 do.
Goor, ...	7½ do.
Sugar, ...	102½ do.
Pepper and spices, ...	387½ do.

II. Imports.

Ponies, ...	57
Wool, ...	2,035 maunds.
Pushum, ...	85 do.
Salt, ...	1,425 do.
Churrus, ...	752 do.
Borax, ...	2,380 do.
Garlic, ...	24½ do.
Fruits, ...	24½ do.
Aloes, ...	22½ do.

The above list has been furnished by Bhoop Ram, Mohurrir of Negi Tara Chund of Lahoul. It is probably incomplete. No register has been kept up in former years in Lahoul of Trade exports and imports, so no accurate comparison between this year's trade statistics and those of former years can be effected, but I was assured in Lahoul by Haree Chund and others, that both exports and imports had this year considerably increased.

No. XVIII.—EXTENSION OF CANAL IRRIGATION IN THE DEHRA ISMAIL KHAN AND DEHRA GHAZEE KHAN DISTRICTS.

From Lieutenant H. Grey, Officiating Deputy Commissioner Dehra Ismail Khan, to Lieutenant Colonel Graham, Officiating Commissioner and Superintendent Derajat Division, No. 57, *dated* 28*th February* 1867.

In accordance with your letter No. 3, dated 4th January 1867, I have the honor to report as follows :—

2. Irrigation Trans Indus may be considered under two heads :

1*st*.—Dams and embankments for arresting and distributing mountain floods and surface drainage.

2*nd*.—Irrigation cuttings and canals, substracting and distributing the water of the Indus and hill feeders of that river.

3. The main feeders of the Indus are—

1.—The Tonk Zam branches—*Hond Shakh.*

2.—The Goomul or Loonee branches.—*Goomul muskore Rodee.*

3.—The Rummuok.

4.—Vehoor Rood.

4. *Tonk Zam.*—The Tonk Zam has little perennial stream, its floods are distributed over Tonk, and permanently dammed below at Tukwara, by the great bund of Ali Khan. Its surplus waters fall away respectively by the Hond Nulla to Yaruk, which spreads, and is wasted before reaching that place; and the Shakh which is permanently dammed at Boodh, and which I have this year caused to be distributed by two "Pals" or wing embankments, some 6 miles in length, (constructed by the zemindars, to whom I have arranged that the farmers shall for one year remit one-fifth portion of their demand) so that most of the water is utilized, and only sufficient surplus gets round these wings to fertilize Mouza Hissam, and none will this year run waste to the river.

From this Shakh between Boodh and Hissam, Rai Tahul Ram formed a plan of cutting a channel to some land he had bought between Dehra

and Shore, but his exhorbitant demands on Government prevented his scheme being taken up, and by my arrangement the water is now utilized by the Seroba Boodh.

This Tank Zam has several feeders, but none of note, save the Sohaili and Cheinee, vast floods which drain the Bhittunnee hills, and are almost equal in magnitude to the Zam itself. The wing also which is dammed at, and irrigates Koree, falls into the same stream.

5. *Goomul or Loonee.*—The perennial waters of the Goomul are dammed up by the Nawab of Tank at the mouth of the Pass, and carried north east through the Goomul Valley and Tank; but the freshets carrying away these bunds, take their natural course south east to Koolachee, there attempting to turn south, they are permanently dammed and turned into the desired course, but their renewed attempts to fall south necessitates a line of no less than four dams, (sketch No. 1) which force them continually east, till Koolachee is irrigated at last. Out flanking the eastern most of these, the Keekurwal, they fall into their natural channel, and though several times caught and compelled to flood the bordering Mouzas, (which flood waters draining into artificial and natural channels are carried on and used up to the last drop in distant villages), continue in the same till they reach the great Sirkari bund of the "Sind" or Dehra Purgannah (sketch No 2).

This permanent dam forces the waters south eastward along a path dictated by an embankment some two miles in length, out flanking which, at last, the Loonee an united stream, no longer falls south by a many branched channel as far as Niewela; whence it wastes itself to the Indus in numberless ravines: as indeed a portion of its waters do at several points from Sheroo downwards.

A small portion of the Goomul floods fall east to Tank as far as Manjhee Kheyl, thence they used formerly to be conveyed by a channel called the Goomul *viâ* Atulkot as far as the village of Goomul in Dehra Tuhseel; the waste is however, now mostly dammed at Manjhee Kheyl, and the little that escapes is used at Atulkot; the paeena villages of Goomul therefore are necessarily desolate, and the channel almost closed.

Again, of the Loonee floods dammed up at Koolachee, a portion forced back from the Paeewal and Suntoowal bunds, fertilizes the Kotdowlut

lands and the tract called Miskore Nehasa, and finds an outlet due east by the Miskore channel which irrigates Sekunder and three other Mouzas below; but passes 8 miles west of Dehra in a ravine so vast, as renders it unsusceptible of utilization, and finally its waters fall across the Grand Trunk Road near Noonwalla in a net work of ravines to join the Indus. Another portion of the Miskore drainage fall away to the Goomül Nulla above mentioned, below Atulkot, and is with the small remnant of those waters, wasted ere they can reach and irrigate Yara Manjhee Kheyl in the Dehra Pergunnah. To utilize this water therefore, at the same time securing to the Siroba their undoubted rights, I am having a long embankment constructed above a raviny tract called Mizr Budr, which will intercept the Miskore drainage ere it falls into these channels and ravines, and turning it through two Mouzas, which will thus be fertilized, into the channel of the Rodee, will return it eventually to its parent channel of the Loonee below Gurra Mahomed Gool. The labor, as that of all the dams and embankments in this illaqua, is furnished by the Mouzas benefitted.

And the portion of the Loonee floods is forced by the Geedurwal dam into,—and directed by the Keekurwal embankment along the Rodee channel—the Nulla from which several branches escape south to irrigate the Mouzas in the angle formed by itself, and the Loonee carries the fertilizing waters as far east as Mudhee, whence escaping in ravines, they return to the Loonee below Gurra Mahomed Gool.

The branches of the Loonee below the Sirkari bund are too small and numerous to be specified.

The Loonee has many feeders of more or less note, all utilized by embankments in the Mouzas on the right bank of the river, which are never reached by its fertilizing waters. The principal ones are—

1. The Dug, fertilizing Kot Zuffur.
2. Zuman Vah, (principal feeder Koorum and Doang) irrigating Loonee and Koolachee.
3. Siwan, (principal feeder Khowruh) irrigating Zurkunnee, Koolachee and Suggoo.
4. Tooa, (watershed of Zurkunnee and Drabund passes) irrigating Drabund.
5. Goodh, (watershed of Drabund and Chondwan passes) irrigating Moosehzie and Gundee Oomur Khan.

It will be seen from the above, that the embankments of the Loonee involves weighty interests both of Government and the people in these Trans Indus pergunnahs; when left to the people they generally failed by reason of dissensions that existed and the country was impoverished. Being subsequently put under the officials of the two Tuhseels, great advantage has been reaped by all parties from the improved supervision, and I have now appointed an officer with power in both Tuhseels, to give this important subject his undivided attention, from which I anticipate still further advantages; however, as frequently before urged by officers in charge of this district, very much of this water supply must always be wasted, vast labor be year by year rendered fruitless, and the resources of the country remain in a great measure undeveloped, until a scientific system of irrigation is applied to this river, and the water supply regulated at pleasure, and distributed as it might be in quantity sufficient for the fertilization of the whole country lying between the Loonee and the Indus. At present, while each great dam stands firm, the country below remains unirrigated, while the floods pent back after irrigating the villages above, fall away uselessly to the river; there is no way to pass on the water supply, and to cut the bund is to undo the labor of months, and render it very *improbable that* the bund remade with new earth will stand in the following year; on the other hand, in heavy floods there being no way of relieving the bund, it is generally swept away, and the country above it remains desolate.

6. *Rummuok.*—The Rummuok is a far inferior stream to the two last mentioned, it waters the Ooshterana illaqua, and is then wasted ere it can fully irrigate the Meerun Rukh; parallel and to the north flows the Gujistan, which passes through the Babur illaqua, and is wasted there ere reaching the Suddozai Jageers on the Grand Trunk Road; on neither of these streams are any irrigation works worth mentioning.

7. *Vehoor Rood.*—Further south of all comes the Vehoor Rood, the whole of the perennial waters of which are consumed above and in the town of Vehowa, but the floods from the Vehowa and Kowruh passes combining, form a great body of water successfully bunded at no one point; however fortunately all the purposes of a bund have during the last few years been effected by the vagaries of the torrent itself, which checking and turning south when within 4 miles of the Indus, has spread over and fertilized a great expanse of ground.

8. *Canals and Cuttings.*—Under the 2nd head or cuttings and canals, there is not, I regret to say, much to notice in this district. My predecessor ordered to be reopened an ancient cutting through an elbow of the cliff which formed the northern bank of the Goomul above Loonee, which elbow, forcing the waters south, prevented any portion of them being raised to the Mouzas on the north bank; this I have had carried out, and have also opened out a channel from the bed of the Goomul above the Loonee Post, by which a portion of the waters are carried through and fertilize that Mouza, and being led into the bed of a feeder of the Zunanwah, irrigate the south of Koolachee Khas.

Sketch No. 3 shews both works which were performed by some Wuzeeries on contract, the expense of the two cuttings respectively Rs. 500 and Rs. 3,000 was borne by Government, the chiefs and the proprietors in proportion of their shares of the produce; (all future expense or labor of keeping them open to be borne by the proprietors) that of Government being paid out of the proceeds of the Tulla or refuse, an inconsiderable item not appertaining to any ones share in the division of the grain heaps, and applied to pay of "Kurawas" "Ungunkushes" or other miscellaneous expenses of the Kham management.

Besides the above, there are three channels for irrigation, issuing from the Indus above Paharpoor, there was another constructed by Rae Tahul Ram for his lands of Meeanee, below Dehra, but as it was destroyed the same year by the floods of the Loonee, and any other in the same neighbourhood would probably share the same fate: it does not deserve much mention. The three Paharpoor channels are called "Kupi Deen Mahommed," "Shahwalla" and "Puranvah," the first was constructed by Nawab Kumrood Deen of Dehra in 1804-9, and was originally brought along the foot of the Khysore range from Oomur Kheyl; but the river having encroached up to the very base of those hills, the mouth of the canal is now 3 miles below Bilot, it is at present of very scanty dimensions (average width 8 and depth 2½ feet) and silted up, so much so, that the water is nearly all expended ere reaching Paharpoor, which Mouza has however fortunately other means of irrigation in the drainage of the valley of Largee, and ranges on each side, which fertilize the whole of its south western lands. It has long been proposed to deepen and widen this canal, and Budget provision of three thousand Rupees was accordingly made, but sanction could

not be obtained for the proposal, I have now put the work in hand by means of labor drawn from the estates that profit, and find means to reconcile the ryots by an occasional feast of bread and meat; but if a small grant could be obtained from the current year's reserve, it would supplement my efforts most opportunely. Within the last three years, Deen Mahommed Shah, Lumberdar of Kotgurh, finding the insufficiency of the Kussie for the wants of all Mouzas on its banks, threw a bund B, across a small Nulla which branched from the river, and excavating a channel, turned the waters south west over his own Mouza and that of Jarra, which then draining into natural depressions, fell in three channels towards the Kussie; the village of Kotla to obtain a share in the benefits, dammed A, an outlet by which the waters of the Nulla escaped higher up, and forced them down to the Syuds bund, and also raised them on to their lands, whence gathering into a natural depression, they soon formed a fourth channel falling towards the Kussie.

Owing to dissensions between the villages, and the fact of Paharpoor and other Mouzas not having assisted Kotgurh and Kotla in their works, the latter villages prevent any water from their channels falling into the Kussie; otherwise, the Kussie provided with these feeders, would not need excavation further north than the limits of Kotgurh; as it is however in the existing condition of dissensions it is as well to keep open the whole length of the channel, or some day a quarrel might result in Kotgurh or Kotla, cutting off the water supply of all the Mouzas below.

The Pooranwali is a natural depression by which the Indus water is let into a waste tract running from Futteh Jaie to the Government preserve at Bund, inside the river bank,—Mouzas of Syd Ali and Mea Wuda;—already the increased value of land is resulting in a great portion of this depression being brought under plough for the Rubbee crops like other lands flooded by the Indus. A very small outlay only is required (once budgetted at Rs. 1,500 but not sanctioned), to carry these waters through the Government preserve of Bund and to the Mouza of Awan beyond, for this however a grant is required, as it does not pass through the lands of any Mouzas to which I could with justice allot the work. Sketch No. 4 shew all these irrigation channels and the country watered by them.

Extract from a Memorandum on the Beloch Tribes in the Dehra Ghazee Khan District by Captain Minchin.

The cultivation on the Scinde lands in this district may be divided into two classes, viz., canals and sylaba, or river inundations, except on the Puchad lands, the cultivation by wells is entirely subordinate to the canals; for the Khurreef crops the wells are only used when the canals fail, and for the Rubbee crops, the ground is always prepared by canal water, and then the wells can irrigate three times the quantity of land they could when the canal water is not used. At a rough estimate, a well can only water at the most 15 acres of land, but when the land has been prepared by canal water, and ploughed up, the same well can easily water 50 acres. At the commencement of British rule there were canals working in the district. Those in the upper portion viz., the Manka, Kotee, Kustoree, Summundri, Dingana and Sahiba, are said to have been excavated under the order of Mahomed Goojur, the then ruler of the country about 1761 A. D. These canals were carefully looked after by the Sikh rulers, who organized a system of statute labor for their yearly clearance, under the name of *chers*, they were paid at the rate of 3 rupees per mensem, half in kind and half in money, and sometimes with a seer of atta, and a pie per man per diem, which has continued down to the present time, although for the past two years they have been cleared by contractors in lieu of statute labour. The canals in the lower portion of the district the Dhoondee, Kootub and Kadira, were excavated by the Mukdoom, a wealthy Syud of Seetpoor; which was then on the right bank of the Indus, and in the Mithunkote Sub-division, and has only been transferred by a change in the course of the stream to the left bank, and Mozuffergurh district, within the last 40 years. He obtained a grant from Nadir Shah empowering him to collect the revenue on these canals. He then induced the zemindars to assist him in this work, remitting to them the half share of the mahsool or Government demand. This must have been about the year 1739 A. D. His descendants are still living at Seetpoor, and the Mukdoom receives a share of the profits as abiana on many of these lands, and it is highly probable that he will endeavour to revive his claim on others, now that most of these canals are being re-excavated. In August 1861, Mussoo Khan Nutkanee, applied for per-

Deputy Commissioner's No. 254, dated 15th August 1861, to Commissioner.
Secretary to Government P. W. D., No. 518C, dated 30th June 1864, and Deputy Commissioner's reply No. 247, dated 22nd July 1864.

mission to excavate a canal in the Sungurh Tahsildaree at his own expense, and to obtain the farm of the lands irrigated by the canal at the present lease for a term of 20 years, and to be vested with proprietary rights ; having no children of his own, he was anxious to have some memorial by which his name should be handed down to future generations, and a better project than that of excavating a canal could not be devised. His application was submitted for the orders of Government, but he was permitted to commence the excavations, subsequently His Honor the Lieutenant Governor sanctioned the project by a Telegraph message, but no official sanction has yet been received ; more recently an application has been submitted to Government to purchase the canal with the consent of the proprietor, who finds that without Government assistance he cannot get the lands cultivated. This canal extends from Murree Mirtanee to Jar Lughari a distance of 14 miles. To the east of the canal the irrigable area by surface channels and jhullars is 11,710 acres. To the west at present there is no cultivation, as it would require a few large channels to be excavated. Within this area 3,428 acres of land are assessed at 900 rupees. Of this however, only 1,760 acres are cultivated, the rest being included in the village area for grazing purposes. There was no cultivation on this canal during the years 1862 and 1863, owing to disputes between Mussoo Khan and the zemindars, the former asking far too large a share of produce considering the novelty of the undertaking in that part of the country, the ignorance of the zemindars who doubted the practicability of the scheme and their constitutional laziness ; in 1864. 1,065 acres were cultivated, the zemindars paying one-seventh of produce on assessed lands, and one-fourth on waste lands not assessed : the zemindars themselves paying in cash the Government demand. During the current year the canal has been under the charge of the Tahsildar of Sunghur, and 1,720 acres have been cultivated, of this about 400 acres have been destroyed by grass-hoppers and 1,320 acres have given a more than average return. Mussoo Khan is not popular, being too anxious to get a quick return for his outlay, and his relationship to Assad Khan, the Kardar of Mungrota prior to annexation, prejudices the zemindars against him. If the canal is purchased by Government, the whole of this tract will be soon cultivated, the drawback to the canal is that the land

about Narree is so low, that the water has to be kept in the canal bed by strong embankments, and the repairs of these embankments is a great source of annoyance to the zemindars. The example given by this Chief, incited some of the other Beloch Chiefs to come forward with irrigation schemes.* Jumal Khan Lugharee, proposed to subscribe 30,000 rupees for the extension of the Dhoondee canal, if Government would complete the undertaking, and give him the lease on the same terms as Mussoo Khan applied for. The zemindars of Mithunkote objected to this, urging that the Dhoondee canal watered their estates, and that therefore they should be allowed to excavate it, with a little difficulty, a sort of Joint Stock Company was formed of zemindars interested in the scheme, and it was arranged that Jumal Khan Lugharee, Emam Buksh Khan Muzaree, and Mussoo Khan Nutkanee, should have one-half of the shares, and the zemindars of the Mithunkote sub-division, including Meer Shah, Newaz Khan Surai, the jagheerdar of Rajunpore, through whose lands a part of the canal runs, and the Mukdoom of Seetpoor whose ancestors excavated the original Dhoondee canal, should have the remaining shares. The amount subscribed was 60,000 rupees, in 120 shares of 500 rupees each. On the case being brought to the notice of Government, a grant of Rs. 20,000 was made to the proprietors of the canal to assist them in the undertaking, as they found that the outlay owing to the hardness of the soil was much greater than they anticipated. The cost of excavation being estimated at 2 annas per 100 cubic feet, whereas the actual cost could not have been less than 6 annas per 100 cubic feet. To induce laborers to settle on these lands, the proprietors offered very low rates of batai, so that as yet they have not reaped any large profits. About two years ago the whole estate was divided amongst the proprietors who resided in the neighbourhood. The share of the other proprietors not living in the neighbourhood being placed in their charge, that is, in every holding a half share belong to the cultivating proprietor, and a half share to the Lugharee and Muzari chiefs, and Mussoo Khan Nutkanee, who received only a share of the produce. These proprietors have further expended large sums of money in excavating supply channels, but as they unfortunately neglected, or forgot to look after the levels, they could not work, and the excavations will have to be made over again. This canal is 50 miles long, and near the tail of it we have located the Boogties, who have settled

* Deputy Commissioner's letter No. 365, dated 16th November 1861 to Commissioner.

in the district, to whom the Lugharee and Muzaree chiefs gave a share to the canal. This canal was originally running for about 10 miles from the mouth. This has led to a great deal of litigation to decide, what were the limits of the portion of the canal which was running when the new portion was commenced. Until the last two years, this canal was crossed about 15 miles from the mouth by a torrent, which left the river a few miles above, and inundated the land parallel to and in its immediate vicinity. This inundation, which, at its height was on an average ten miles broad and ten feet deep, and which being joined at a point below where it crossed the canal by a second inundation, known as the Tulaiwalla, extended as far as Mithunkote, has now been stopped by a large inundation bund at Shah Jamal. This bund was breached the first year, but has not suffered at all this past season, although the river has so far encroached as to threaten the Bund, and actually carried away 2,000 feet of the mouth of the canal which forms its southern limit. If this Bund stands, which I see no reason to doubt, judging by the analogous case of the Kala Bund, the cultivation on the Dhoondee canal ought to increase enormously and in time become most remunerative. The original plan was to excavate the parent canal with two branches, the Mobarrik and Babra, but as yet only the Dhoondee and Babra have been completed; but the completion of the Mobarrik is essential to the success of the Boogty settlement, so I trust that Government will assist the proprietors in completing this work. The Noorwah* was a branch of the Dhoondee, but the shareholders felt that they must either build a regulator bridge to ensure the proper supply being taken for the Noor, or that this branch should have a separate mouth for itself. They chose the latter alternative, and offered the proprietors of the Noor canal 2,000 rupees to cut out a new mouth for themselves, an offer which was gladly accepted. The Noor Canal now lies in what was the very centre of the inundation, and therefore derives even more benefit from the Shah Jumal Bund than the Dhoondee. The proprietors so appreciate this fact, that they have now subscribed a further sum of 4,000 rupees to improve the canal, which will be done this season as soon as the stability of the Shah Jumal Bund is ensured, which, provided the river does not encroach further on the Bund and carry it away bodily, is only a

* The Noor canal has again been joined to the Dhoondee and this gives it two good mouths.

matter of time, as every year the earth consolidates and makes the Bund stronger than before. This tract will be the best cultivated and the richest portion of the district, it is crossed by the Gamoowalla, Soanee, Noor and Dhoondee Canals, and a proposition has been mooted by the zemindars to cut another small canal between the Dhoondee and Noor, the only difficulty being the expense of building a regulator bridge at the point where it crosses the bund.

In the north of the district, Fazul Ali Khan, the enterprising chief of the Loonds, excavated a canal to irrigate his own estates entirely at his own cost. The only assistance be received from Government was the erection of a regulator bridge over the canal where it crosses the great inundation bund, and a bridge over the canal where it crosses the district road. This canal takes its rise from the river just above the Manka canal, and runs parallel to it. The Cosas have carried on this canal to Kot Hybut to water their estates. Under the direction and at the expense of Secunder Khan Cosa, a branch cf the Manka called the Dhori, formerly irrigated a small portion of their estates. The Fazilwah was tailed into this, and the cut improved and extended, It still retains its connection with the Manka, but water is only given when the Fazilwah fails; all the arrangements for this work was carried out by Secunder Khan without any assistance from Government.

Deputy Commissioner's letter No. 365 dated 16th November 1861, and No. 282 dated 29th June 1863, to Commissioner.

The Lugharee Chiefs not contented with their share in the Dhoondee, projected and carried out the extension of the Manka canal to the Dajul Jampoor road. In this they were assisted by Government, who defrayed the estimated half cost of clearance. This was a work of great magnitude to be undertaken by a single individual. The estimate for it was Rupees 58,595 and included the extension of the canal for a distance of 11 miles, and widening and deeping the old bed for 8 miles; but the estimate was much below the actual cost on account of the hardness of the soil. The scheme could never have been properly carried out, if the members of the tribe had not come to the assistance of their chief, who divided amongst them a large portion of the waste land to be brought under cultivation, each shareholder clearing out the portion of the canal which ran through the plot of ground allotted to him. In the south of the district, the Muzarees and Dreeshuks incited by the example

thus shown to them, formed a plan for excavating the Gamul branch of the Kadra canal, and applied to the Executive Engineer Indus canals for assistance; an application was submitted to Government, and in the mean time the projectors commenced the work, and dug out a new bed of the canal for a distance of 10 miles, as elsewhere, the extreme hardness of the soil disappointed the expectations of the parties interested in the undertaking. The original estimate was for 56,000 rupees at the ordinary rate of 2 annas per 100 cubic feet, of which 28,000 rupees were subscribed by the projectors; but according to the revised estimate, the cost of excavations will not be less than 80,000 rupees. A plan has now been submitted to Government, to excavate the canal at the sole risk and expense of Government, repaying the zemindars the outlay they have already incurred, and leasing the lands to the proprietors on payment of a water rate, which it is shewn, must prove highly remunerative; and therefore both financially and politically must prove an immense boon to the district. The Kootub canal which runs through the Rajunpoor Jagheer, has also been improved, and many new cuts have been made from it. The chief being the Mobarrik, the Hamed, the Rajwah Gooti, and the Fazulwah Hazoori, Kaloo, and Chuttohul, which have been excavated at the cost of the zemindars, who however have been liberally assisted with Tuccavee grants by Government, and the Jagheerdar Meer Shah Newaz Khan Surai, has also assisted as far as his restricted means will allow. In the case of the Mobarrik, the half cost of clearance was paid by Government. To sum up briefly the irrigation works carried out in the District during the past four years at the joint expense of zemindars and the Government are as follows:—

1. The Mussoomah at the sole cost of the projector Mussoo Khan Nutkanee, at a cost of Rupees 26,000.

2. The Dhoondee at the joint expense of Government and the zemindars at a cost of Rupees 80,000.

3. The Fazilwah and Dhori at the sole cost of the projectors Fuzul Allee Khan Loond and Secunder Khan Cosa, at an estimated cost of Rupees 18,000.

4. The Noor by the zemindars at a cost of Rupees 6,000.

5. The extension of the Manka at a cost of not less than 65,000 rupees, of which 29,270 rupees were paid by Government.

6. The Gamul branch of the Kadra Canal on which the zemindars have paid 28,000 Rupees.

7. Branch canals from the Kootub at a cost of about 6,000 Rupees, on these works the capital expended by the chiefs and principal Zemindars of the district cannot be less than 1,50,000 rupees. Of other irrigation works, the principal are the daming up the mouth of the Shoree Hill stream, and making supply channels to irrigate the waste lands in front, of Kinn, which was completed this last year by the Muzaree chief, Emam Bux Khan, with the assistance of his tribe, on account of which Government has sanctioned the rent free grant of the lands irrigated by this work for a term of 20 years; and the improvements of the several mouths and channels of the Guwaz, Noorwah, Nye Shumali, and Nowa Shahur branches of the Kaho Nullah, in the Dajul Tehseel, at a cost of not less than 8,000 rupees, under the superintendence of Tehseeldar, Chimmun Mull, to whom these works are entirely due.

From Lieutenant Colonel S. Graham, Officiating Commissioner and Superintendent Derajat Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 132, *dated 4th September* 1867.

With reference to your office docket No. 1851, dated 10th May 1865, forwarding copy of the Financial Commissioner's letter (Extract paras 2 and 3) of No. 175 of 22nd March 1865, to the address of the Secretary to Government Punjab, with copy of the Government reply No. 370 of 6th May 1865, calling for a summarized account of what has been done in the Districts of Dehra Ismail Khan and Dehra Ghazee Khan for the extension of irrigation since the commencement of British rule, with the view of publication in the Gazette, and subsequent reminders. I have the honor to forward a report with Map, by the Deputy Commissioner of Derah Ismail Khan on the above subject, which, as anticipated by His Honor the Lieutenant Governor is necessarily meagre on the matter of inundation canals, and an extract on the same subject from a very interesting and valuable report, which has just reached me, by Captain Minchin, on the general administration of the Dehra Gazee Khan District, lately and for many years, under charged of that officer.

2. A further report by Lieutenant Sandeman, now in charge of the latter District, is under preparation, as referred to in this office No. 114 of 19th July 1867, and will be forwarded on receipt.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 41 of 20th January 1868.

With reference to his office No. 370 of 6th May 1865, submits for the information of His Honor the Lieutenant Governor, a letter in original from the Commissioner Derajat No. 132 of 4th September last, with reports on the Inundation Canals in the Dehra Ismail and Dehra Ghazee Khan Districts.

2. The Financial Commissioner suggests that these papers should now be published in the Selections of this Department, instead of in the *Gazette* as originally intended.

3. With reference to the remarks of the Deputy Commissioner Dehra Ismail Khan, regarding projects for extending canal irrigation in that district, refers to the separate communication of this date No. 40.

From T. H. Thornton Esquire, Secretary to Government Punjab, J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 263 of 4th April 1868.

In returning the reports received with your letter No. 410 of 2nd January 1868, regarding the inundation canals of the Dehra Ismail Khan and Dehra Ghazee Khan Districts, I am desired to inform you, that the Hon'ble the Lieutenant Governor has perused these reports with much interest, and sanctions their publication in the "Selections of the Records of the Financial Commissioner's Office."

No. XIX.—HINGUNGHAT AND OTHER COTTON CULTIVATION.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 243, *dated* 20*th April* 1867.

Forwards copy of a letter from Mr. Carnac, Cotton Commissioner Central Provinces, with whom Financial Commissioner is requested to place himself in direct communication, informing the Government of the course which may be adopted. Suggests that the opinion of Dr. Henderson who has devoted much attention to the subject, may be taken.

From H. R. Carnac Esquire, Cotton Commissioner Central Provinces, Nagpore, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 1274, *dated* 6*th April* 1867.

I desire to know whether I can be of any assistance in supplying to you, seed for cotton experiments in the Punjab.

2. Of exotic seed, I could supply New Orleans, Sea Island, and Egyptian. I expect to have a large stock of *acclimatized* New Orleans seed.

3. The Hingunghat cotton (grown in the Wurdah district of these provinces) is pronounced to be the best in India, and should you desire it, I could send you some for a trial in your province.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab to Dr. G. Henderson, Umritsur, No. 2051 *dated* 2*nd May* 1867.

Forwards copies of above, and enquires what quantity of cotton seed, and of what kind, should be ordered, and in what districts it could, with best advantage, be distributed; also, what is the best season of the year to sow it. Five maunds of cotton seed are being sent to the Punjab by the Cotton Commissioner of Dharwar. It would be advisable to have several varieties tried: some might be planted in rukh lands in districts where the Deputy Commissioner takes an interest in the matter, and leases could be given to cultivators for the purpose.

From Dr. G. Henderson, Amritsur, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No.——dated 4th May 1867.

In reply to No. 2051, dated 2nd instant, observes that the best time for sowing cotton is from 15th March to 15th April. Zemindars do sometimes sow later, even after the first rain has fallen; but to get good results—from exotic cotton especially—it ought to be sown early. Recommends that New Orleans, Sea Island, and Hingunghat cotton be got, ten maunds of each will be sufficient, as four seers will sow about an acre, making allowance for seeds which do not germinate. The seed should be got as soon as the next crop is ripe, and distributed in January. A few seers of as many kinds as possible might be got at once by dak banghy, and tried at Lahore on an acre of the best cotton ground available. It is a mistake to distribute to natives imported seed, it should be given to District Officers to be grown in Government Gardens; and if the produce is good, then the seed raised in the district should be given to Zemindars. Government Gardens at sudder stations are not sufficiently utilized for purposes of acclimatization.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 523—4897, *dated 7th October* 1867.

With reference to No. 243, dated 20th April, forwards for perusal Financial Commissioner's No. 2051, dated 2nd May, and Dr. Henderson's reply thereto, and intimates that five (5) maunds of Hingunghat seed have been ordered from Nagpore, and that four bags of Egyptian seed are on the way from Bombay.

2. The seed will arrive during the cold weather, and will be available for distribution and experiment in March or April, which is said to be the proper time for sowing.

3. The Secretary Agri-Horticultural Society has been requested to supervise some experiments in the Society's gardens, and it is hoped similar experiments will be undertaken by some of the Local Committees of districts.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to H. R. Carnac Esquire, Cotton Commissioner Central Provinces, Nagpore, No. 4898 *dated 7th October* 1867.

Referring to his No. 1274, dated 6th April 1867, addressed to the Punjab Government, states that the Financial Commissioner will be glad to receive a supply of Hingunghat, and of any other variety of cotton seed procurable, for experimental sowings in the Punjab.

It having been ascertained from the Secretary Agri-Horticultural Society Punjab, that the best time for sowing is from the 15th March to 15th April, and that exotic seed especially requires to be sown early, the Financial Commissioner would feel obliged if a small supply could be sent at once for experiments on a small scale in gardens.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to the Secretary Local Committees Goojranwalla, Amritsur, Jullundur, Sealkote, Goordaspoor, Ferozepore, Jhelum, and Goojrat, Nos. 4902 *to* 4909, *dated 7th October* 1867.

Intimates that a supply of Hingunghat and Egyptian cotton seed will shortly arrive at Lahore. The Government is anxious that a fair trial should be given to it. Experiments will be conducted in Lahore by the Deputy Commissioner, and by the Agri-Horticultural Society.

2. The Financial Commissioner desires to be informed whether similar experiments can be undertaken by the Local Committee in the spring, and if so, what quantity of seed up to ten seers can be utilized in Nuzzool gardens or lands. It is estimated that four seers of seed will sow an acre of land. The proper time for sowing is from 15th March to 15th April.

From H. R. Carnac Esquire, Cotton Commissioner Central Provinces, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 991 *dated 18th March* 1868.

Advises dispatch of 10 maunds of Hingunghat cotton seed to Lahore. Encloses a memorandum on the Hingunghat plant, and hopes it may prove of some assistance in the experiments proposed to be undertaken.

Would be glad to receive information as to the results of the experiments at the close of the season, in the form annexed to the memo; and particularly urges the importance of establishing a seed garden, and the selection of seed on the pedigree system.

MEMORANDUM.

As several gentlemen who are desirous of making experiments in Bengal this season with Hingunghat cotton seed, have requested me to give them information on certain points regarding the locality and soil in which the cotton thrives, and the manner of its cultivation, I have drawn up the following brief note, which I hope may be of some use to those who are inclined to assist in extending the cultivation of this superior class of indigenous cotton.

Hingunghat cotton is grown in the Wurdah district of the Central Provinces, in the neighbourhood of the town of Hingunghat—an important cotton market—from which place the cotton takes its name.

The cotton is celebrated for its cleanness (freedom from leaf and dirt), brightness of colour, length, strength, evenness, and silkiness of staple. In all these points—all of which are regarded as of great importance by the spinner—the Hingunghat variety is superior to most of the Indian cottons. As compared with the cotton of Bengal, that grown in the Hingunghat country, besides being superior in all the respects noticed above, is particularly glossy and soft, whilst Bengal cotton is woolly and dull in appearance, and rough and harsh to the touch.

There can be little doubt that the superior quality of this cotton is to be attributed to the physical advantages of the tract in which it is grown. The Wurdah district is situated on the northern extremity of the great Deccan sheet of trap, which extends from Mudnoor far south in the territory of His Highness the Nizam, to the low hills which form the northern boundary of the Wurdah district. The height of the cultivated plateau is not more than 900 feet above the sea level.

The soil is of the well known "*regur*" or black cotton soil, composed of the debris of the trap rock, the basis of the geological formation of the district. The following description and scientific analysis of this soil is extracted from Ansted's Geology, p. 343:—

"Its colour is bluish black, greenish or dark grey. It forms into a "paste with water, and gives a clayey odour. It absorbs moisture rapidly, "and parts with it in dry and hot weather. Its thickness varies from 3 to "about 20 feet. It is cultivated very easily, yielding a rotation of crops, "consisting of cotton and two kinds of corn. It rarely requires to be left "fallow, and demands but little husbandry, although for the last 2,000 "years this soil has continued in cultivation without manure, retaining "the utmost fertility."

"The following is an analysis of the 'Regur':—

Silica, ...	48·20
Alumnia, ...	20·30
Carbonate of Lime, ...	16·00
Carbonate of Magnesia, ...	10·20
Oxide of Iron, ...	1·00
Water and organic matter, ...	4·30
	100

In the Hingunghat country this soil varies in depth from 2 to 15 feet, but the average depth of the best cotton growing lands does not exceed 6 or 8 feet. Beneath this rich coating, kunkur, a sort of hard gravel, is found, and below this again, is the trap rock already noticed.

The country slopes gradually southward towards the river Wurdah, which forms the southern boundary of the tract; and as the village lands, following the upheavings of the volcanic crust beneath, lie in huge waves of soil, the direction of which is at right angles to the course of the river, the drainage is excellent, the rain water being carried off by streams flowing down between the troughs of these waves, and discharging themselves into the Wurdah. The rain-fall in the tract is moderate, not exceeding on an average 39 inches. Last season the monsoon was unusually heavy, and very much harm was in consequence caused to the cotton crops.

It will be seen from the above, that the tract in which the cotton is grown possesses two great physical advantages—a good soil, and excellent drainage; and of the two, the drainage is, if anything, of even greater importance than the soil. For although due provision must be made for the tap-root of the plant, which strikes straight down into the ground, it is

not necessary that the soil should be more than from 4 to 5 feet deep. Cotton is, of course, often sown in soil the depth of which is not one quarter of the above, but the poorness of the soil tells upon the plant and its produce. On the other hand, cotton is apt to be clogged and smothered in very deep, rich soil; and this is one of the reasons, I believe, for the plant not being very extensively cultivated in the Nurbudda valley, the lands of which are much better adapted for wheat, which is grown in, and exported in large quantities from the Nurbudda district. In the Wurdah district, the deepest soil is to be found in the Mandgaon pergunnah, and here too, wheat takes the place of cotton, which the people say thrives better in a lighter soil.

In selecting the fields for the experimental culture of Hingunghat cotton, I would recommend then, that particular attention be paid to the drainage of the ground; at the same time, a fair average soil should be allotted to the crop.

As regards the cultivation, I hardly know the seasons in which cotton is planted in the Bengal province, or the manner in which the crop is now treated. I am unable, therefore, to offer any suggestions regarding improvements to be made in the present mode of cultivation there.

I will, however, mention briefly the method in force in the Hingunghat country, and as that system is sufficiently successful, it would, perhaps, be well if the gentlemen who are good enough to make experiments with the Hingunghat seed, were to follow that system, unless their experience suggests that it is not adapted to the circumstances of the country. Where opportunity offers, it would be well to cultivate one field according to the Hingunghat plan, and to treat another in the manner peculiar to the district in which the experiment is made.

In the Hingunghat country, the cotton is sown during the first break in the weather following the setting in of the rains. * The field selected is generally one that has borne a grain crop the previous year, for, of course, cotton should never be sown two seasons running in the same ground. Previous to the commencement of the monsoon, the ground is prepared for the crop by being ploughed, or rather scraped by the

* In some parts of the Chandah district, and on the Godavery, a small crop is raised by sowing the cotton after the rains. It ripens in April.

"*bukhur*," a rough instrument which is peculiar to this part of the country, and which takes the place of the plough of Eastern India. The *bukhur* is passed over the field five or six times according to circumstances, and has the effect of scraping up and loosening the soil, and preparing it to drink in the rain, which, instead of running off the surface, as on the hard untilled ground, sinks through the loose earth, moistening and softening it, so as to admit of the working of the drill-plough, and the commencement of sowing operations. In this part of India cotton is never sown broadcast, but always in rows; sometimes with the drill-plough, or, when the soil is light, with the aid of the *bukhur*, and a bamboo tube down which the seed is poured, and which serves the part of the feeder in the drill-plough. The seed, from the circumstance of much of the cotton fibre adhering to it, often clogs the feeder, and, to obviate this, the cultivators in this part of the country generally roll the seed in cow-dung or dry earth, which process helps it to run more freely down the tube. I mention this, as the Hingunghat seed may, perhaps, without the use of this precaution, give some trouble to the sowers of Bengal. In this part of the country the seed is sown very close, too close together, and the rows are, as a rule, not far enough apart. As, however, the plant is small, and does not branch out, it admits of being more closely packed than many other varieties; but I would recommend that the rows be not less than 2½ to 3 feet apart. Soon after the plant appears above ground, the soil between the rows, which the action of the rain has hardened and caked, is loosened with a sort of hoe—a small edition of the *bukhur*—which fits in between the lines. The young plant is thus helped to push its way above ground, and is now left pretty well to itself, until the weeds begin to appear. The weeds should then be carefully removed, the weeding being done by hand; and this process should be repeated sufficiently often to keep the field perfectly free from grass.

As the plants progress, care should be taken to thin the field in places where the plants are found to have been sown too close together. In foreign soil the Hingunghat plant has sometimes been found to shoot up very rapidly, and to show a tendency to run to wood. In its own country, it is a short, sturdy little plant, small, seldom more than 3 feet in height, but yielding a good quantity of cotton—the great point—and when it appears to be outgrowing its strength, it would be well to "top it," by

cutting off a few inches from the top of the plant. And too much care cannot be bestowed in following the plan of "rogueing" the crop, as advocated by Major Trevor Clarke, and thereby ensuring the purity and high quality of the plant. In the Hingunghat country this valuable process has only recently been introduced; and although the seed sent to Bengal and other parts of India has been selected from the best lands, and with considerable care, I cannot too strongly urge the importance of "rogueing" the crop, and selecting the seed as recommended in Major Trevor Clarke's pamphlet. Spare copies of the pamphlet will be forwarded, but for facility of reference, an extract from this valuable paper is here annexed.

"But I must now turn your attention to a fresh subject, already, "however, alluded to in my former letters, namely, the use of pure seed, "to be effected by the rigid isolation of sorts. Next to a constant supply "from any indicated source the manufacturer requires a *constant quality of* "*staple.* From accounts I have received from credible eye-witnesses "the mixture of sorts in a cotton field, especially in the West Indies, is "inconceivable, the crop in some instances looking like a flower garden "with different sorts, sizes, and colours. In one case, my informant "described the not unfrequent appearance of a red-blossomed sort, "evidently the Indian *G. Arboreum*, in his fields.

"This is the work of the native labourer, who is either incapable "or unwilling to see the difference between right and wrong, at any rate "where his own interests are not concerned. His delight seems to be "in reversing, confusing, or nullifying especial orders the moment the "master's eye is off, and the mixture of seed is generally his preliminary "operation. In my own experience, I rarely receive unmixed samples, "and wrongly named sorts are continually sent home, although probably "in good faith, as far as concerns the sender.

"The one and only remedy for this will be found in English skill, "science and energy, strongly exerted in this one direction. Experimental "farms, at the expense of, or encouraged by Government, are nothing "new; for a century or two these have been carried on in spite of the "perversity of man, as well as that of the elements, and have borne their "fruits. My modification, however, of the system would be this:—*Let* "*such establishments be entirely devoted to seed farming*, the sole effort being "restricted to the production of pure seed in the country where it is des-

" tined to be grown in future. In this country no grower of seed, either for " agricultural or gardening purposes, would now obtain a sale for his " produce, were he to supply his customers with mixed or inferior seeds. " In the establishments of such persons, the master himself goes through " his crops several times a year for the purpose of destroying every plant " which proves inferior or untrue to sort. This weeding process is techni- " cally and expressively called 'rogueing' the crop, and is absolutely " necessary to ensure purity and high quality. At the same time, " improvement by special selection is carried on; single plants showing " high qualities are picked out for propagation, and the produce of these " submitted even more rigidly to the same treatment."*

If these instructions be carefully followed, and the produce of the best plants be carefully selected on the pedigree system, and seed gardens be established and sown with the selected produce, I have little doubt that the introduction of the Hingunghat cotton seed into Bengal will do much good.

The cotton plant begins to flower in September; during the following month the pods form, and in November the capsules burst, and the cotton is ready to be picked. Care should be taken to pick the cotton whilst the plant is yet young and fresh, and before the leaves wither and die, and become mixed up with the cotton. Much of the cotton in this part of India is damaged, and suffers in price from the very careless manner in which this process is performed.

The ginning, or the separation of the cotton from the seed, is performed here by the common native "*Churka*," or "*Recha*" as it is more properly called. Where Platt's Macarthy gins are at hand, I would recommend that they be used.

It will be noticed that I have not recommended the use of manure. Its use should depend on the circumstances of the soil, and the experience of the cultivators in that part of India where the experiment is made. What suits Hingunghat land, may not be found to answer in Lower Bengal, but I may mention that here the cultivators do not generally manure their cotton fields. They hold that if the rain-fall is unusually heavy,

* Major Trevor Clarke's "Improvement of Cotton by Purity of Seed" page 3. Published by the Cotton Supply Association, September 1866.

manure may be found to answer, but that in their country, where the fall does not exceed 39 inches, manure is apt to excite the plant, and drive it to wood, resulting in very fine cotton plants, with hardly any cotton! Experiments are being made to test the correctness of this theory. In a new country I should be glad to see as many experiments as possible tried, and it would be well not only to sow the seed in every sort of soil available, but also to try the effect of the cultivation with and without manure.

I would, however, advise all who undertake experiments with this seed, to sow not less than 5 or 6 acres at a time. Any experiment conducted on a smaller scale than this, will hardly be satisfactory. On an average, from 8 to 10 lbs. of cotton seed are required for an acre, and thus from 50 to 60 lbs. of the seed will suffice for each trial.

Where convenient, I should be glad if not less than 12 lbs. of *Kupas* (uncleaned cotton) from each field could be forwarded to my address at Nagpore, with a statement in the accompanying form, showing the result of the experiment.

I need hardly say that I shall be at all times exceedingly glad to answer any questions, and to render any assistance in my power to all who take an interest in the subject.

Result of Experiments with Hingunghat Cotton seed in

Size of field and quantity of cotton sown.	Description of soil.	Yield of *Kupas* (cotton in seed) in lbs.	Yield of cleaned cotton in lbs.	REMARKS.
				Here it would be convenient, if short descriptions of locality could be entered, with particulars of the treatment the crops received, of the season, &c., &c.

From H. Rivett Carnac Esquire, Cotton Commissioner Central Provinces, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 1,772, *dated* 30*th June* 1868.

Requests the favor of early intimation being sent to him of the arrival of the Hingunghat cotton seed referred to in his letter No. 991, dated 13th May 1868.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to H. Rivett Carnac Esquire, Cotton Commissioner Central Provinces. No. 3,521, *dated* 15*th July* 1868.

In reply to No. 1,772 dated 30th June 1868, intimates that the Hingunghat cotton seed arrived at Delhi about the end of May.

2. Two and a half maunds were thence distributed in the Delhi division, and the same quantity in the Amballa division. The remaining five maunds were distributed between the districts of Lahore, Amritsur, and Rawul Pindee.

No. XX.—BYSAKEE CATTLE FAIR—UMRITSUR.

From Lieutenant Colonel O. J. McL. Farrington, Officiating Commissioner and Superintendent Umritsur Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab,—No. 164 *dated* 9*th June* 1868.

Submits a letter from Major H. B. Urmston, Deputy Commissioner Umritsur, No. 321, dated 3rd instant, reporting on the cattle fair held during the Bysakee Festival in April last, at Umritsur, together with a statement of the number of cattle exhibited, and of the prizes awarded.

From Major H. B. Urmston, Officiating Deputy Commissioner Umritsur, to Lieutenant Colonel O. J. McL. Farrington, Officiating Commissioner and Superintendent Umritsur Division,—No. 321, *dated 3rd June* 1868.

I beg now to forward the usual statement connected with the large cattle fair held during the Bysakee Festival at Umritsur in April last, from which it will be observed that nearly 70,000 head of cattle were brought in for sale or exchange.

2. This fair is held simultaneouly with the Horse fair, upon which I have just reported, but at a different spot, and extends over from 6 to 8 days.

3. Although on visiting the fair several times, I was invariably informed that the cattle were more numerous than in former years, yet on comparing the returns with those for last year, I find there was a decrease this year in the number of buffaloes, or 60,631 to 89,073, which it is difficult to account for. Bulls and cows, however, increased about three-fold on this occasion, and heifers and calves were more than double in number.

4. I was much struck with the specimens on the day of the distribution of prizes, they were remarkably good, though fewer in number than last year; and would have done credit to an English Cattle Show.

5. I regret that no return has been made of the number of camels brought to the fair. Many hundreds were present; * and a large business

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* I have since ascertained that about 600 camels were brought in for sale.

was done in buying and selling. On the next occasion arrangments will be made to enumerate them, and also to give prizes for the best breed of camels; for notwithstanding our improved means of transit, and railway accommodation on main lines, it is clear that the camel will long continue to be a common beast of burden for much of the cross country trade, and that every encouragement should therefore be held out for keeping up a really good breed.

6. The same may be said of mules, to which class of animals the late Abyssinian Expedition has called special attention, and proved its inestimable value in difficult and mountainous countries.

7. In 1867 only four prizes were given for mules, aggregating 35 Rupees, a sum obviously insufficient to attract breeders from any distance, or to create emulation. On the present occasion I gave eight prizes, aggregating 220 Rupees; the highest of Rs. 50, one of Rs. 40, and others as per detail in the statement.

8. The Jhelum district carried off most of the prizes: a result not to be wondered at. Next year there will, doubtless, be an improvement both in quantity and quality.

9. Native Committees were appointed to select both mules and cattle, consisting of some of the leading gentlemen, with whom were associated chowdrees and zaildars known to be good judges. Their awards were, I have reason to believe, impartially given and just.

10. The amount of Canal Water Bills is, as you are aware, paid to Executive Engineer Baree Doab Canal, for the supply of water which is specially given to accommodate the people and cattle attending the fair: without this supply the fair could not be held.

11. The lease for levying fees at the cattle fair was sold for 2,380 Rupees, and received your sanction in No. 164, dated 30th March last. It was less by 45 Rupees of the previous year; but, as above stated, 450 Rupees of that was remitted. I shall feel obliged by your obtaining the Financial Commissioner's sanction to the bill at you earliest convenience.

From J. A. E. Miller Esquire, Secretary to the Financial Commissioner Punjab, to Lieutenant Colonel O. J. McL. Farrington, Officiating Commissioner and Superintendent Umritsur Division,—No. 4517 *dated* 11*th September* 1868.

Acknowledges receipt of No. 164, dated 9th June 1868, with enclosures relating to the Bysakee Cattle fair at Umritsur, the results of which may be considered satisfactory. With reference to the surplus of Rupees 1320-9-9, shown to be at credit of the District Fund, the Deputy Commissioner should be called upon to state whether this amount is actually in deposit in the Treasury, or whether any portion of it is still due from contractors.

The award of prizes for mules is approved; but with reference to para. 5 of the report observes, that instructions to award prizes for camels were conveyed in para. 3 of this office No. 4888, dated 7th October 1867, and should have been attended to on the present occasion.

STATEMENT of Cattle brought to Bysakhee Fair of 1868, *and detail of prizes awarded.*

Description of Cattle.	No. brought to fair.	No. selected as good specimens of total No. brought.	Number for which prizes were awarded.	DETAIL OF PRIZES.			Name of owner.	Village.	District.	REMARKS.
				Age of Annual.	No. of prize.	Amount.				
Bulls, ...	4,773	4	4	...	1	10	Huzara Singh,...	Punnokey, ...	Umritsur, ...	Oxen for Carts.
...	...	...	...	...	...	10	Futteh Singh, ...	Norungabad, ...	Do., ...	
...	...	...	...	...	...	10	Do ...	Do., ...	Do., ...	
...	...	...	...	...	2	5	Man Singh, ...	Jelalabad, ...	Ferozepoor, ...	Oxen for Plough.
...	...	...	...	...	...	5	Durgaha Singh,	Bhindran, ...	Umritsur, ...	
					Total,	40				
Cows, ...	3,349	1	1	...	1	5	Emam Deen, ...	Sarchoor, ...	Do.	
Calves, ...	528	4	4	3 years.	1	50	Heera Singh, ...	Wudala, ...	Do.	
...	...	...	...	...	2	25	Jowahir Singh,	Gilhath, ...	Lahore.	
...	...	...	...	2 years.	3	20	Roshun, ...	Milkee, ...	Ferozepoor.	
...	...	...	...	...	4	10	Bahader Singh,	Malewala, ...	Umritsur.	
					Total,	105				
Heifers, ...	504	2	2	2 years,	1	15	Jaba, ...	Umritsur, ...	Umritsur.	
...	...	...	...	...	2	10	Bolakee, ...	Do., ...	Do.	
					Total,	25				
Buffaloes,										
Males, ...	35,966	8	8	...	1	8	Bela Singh, ...	Malokey, ...	Ferozepoor.	
Females, ...	24,665	...	...	...	...	8	Ram Singh, ...	Medaree, ...	Putteala.	
...	...	...	...	...	...	8	Nutha Singh, ...	Chola, ...	Umritsur.	
...	...	...	...	...	...	8	Jodh Dass, ...	Ghunnyekee, ...	Do.	
...	...	...	...	...	2	4	Khurk Singh, ...	Pindee Bhatteean,	Goojranwalla.	
...	...	...	...	...	...	4	Kooba, ...	Umritsur, ...	Umritsur.	
...	...	...	...	...	...	4	Heera, ...	Kote Syed Mahmood, ...	Do.	
...	...	...	...	...	...	4	Poorun, ...	Mirzapoor, ...	Hoshiarpoor.	
					Total,	48				

Mules, ...	* 42	9	9	3 years.	1	40	Nar Singh, ..	Narkullee, ...	Jehlum, ...	* Exclusive of those at the Horse Fair, about 300 in all.
...	...	...	...	...	2	30	Lal Singh, ...	Gundeewal, Pind Dadun Khan,	Do., ...	
...	...	...	...	...	3	20	Esur Singh, ...	Turalee, ...	Rawulpindee, ...	
...	...	...	...	...	4	10	Omra, ...	Futtehgurh, ...	Umritsur, ...	
...	...	...	...	...	gratuity.	5	Shibdyal, ...	Bhuttunwal, ...	Jehlum, ...	
...	...	...	...	4 years.	1	50	Ram Kishen, ...	Umritsur, ..	Umritsur, ...	
...	...	...	...	...	2	30	Pala Singh, ...	Dhuddyal, ...	Jehlum, ...	
...	...	...	...	...	3	20	Hursa Singh, ...	Do. ...	Do., ...	
...	...	...	...	...	4	15	Hakum, ...	Luddeywala, ...	Goojranwalla ...	
					Total,	220				
			Grand Total, Rs.,		...	443				

No. XXI.—HINGUNGHAT COTTON CULTIVATION.*

From H. Rivett-Carnac Esquire, Cotton Commissioner Central Provinces and the Berars, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, Punjab,—No. 1,991, *dated* 26*th June* 1868.

In continuation of my letter No. 991, dated 13th May, I would desire to submit copy of correspondence regarding the Hingunghat Cotton plant addressed to the Government of Bombay, and which has been printed by that Government, and published in the Bombay *Government Gazette* of the 18th instant.

2. The Memorandum on the Hingunghat plant has already been forwarded to you; but I should be glad if the attention of all who undertake experiments with the seed in the provinces under the control of the Punjab Government, could be drawn to para. 3 of my letter No. 1,329, to the Secretary to the Government Bombay, in which the importance of selecting the seed is alluded to.

From H. Rivett-Carnac Esquire, Cotton Commissioner Central Provinces and the Berars, to the Secretary to the Government of Bombay. No. 1,329, *dated* 28*th May* 1868.

With reference to your letter No. 3,484, dated 10th October 1867, I desire now to report the steps that have been taken this season to supply Hingunghat Cotton seed to gentlemen in the Bombay Presidency, who have been willing to undertake experiments with this superior class of indigenous cotton.

2. The names of the gentlemen who have applied for Hingunghat cotton seed, and the quantity sent to each, is given below :—

Through Commissioner of Sind—

No. 1.	Superintendent Thurr and Parkur,		160lbs.
2.	Political Superintendent Upper Sind Frontier,		600lbs.
3.	Collector of Kurrachee,	...	600lbs.

Through Officiating Commissioner Southern Division—

No. 4.	Collector of Belgaum,	...	2 mds. (of 82lbs. each.)
5.	Collector of Ahmednuggur,	...	18 „ (ditto.)
6.	Collector of Poona,	...	50lbs.
7.	Collector of Sattara,	...	100lbs.

* In continuation of Selection No. XIX, pp. 105—117.

Through Inspector in Chief Cotton Department, Bombay—

No. 8. Cotton Department in Sind, ½ ton.
9. Cotton Inspector, Dharwar, 1 „
10. Cotton Department Surat & Broach, 5 mds. (of 82lbs. each.)
11. Cotton Department Sholapore and Poona, .. 13,000lbs.

Applied for, and despatched direct—

No. 12. C. Hogg Esqr., Collector of Broach, 10 mds. (of 82lbs. each.)
13. J. McL. Campbell, 2nd Assistant Collector, Khandeish, ... 8 maunds, (Do.)

3. I have also the honor to enclose copy of a brief Memorandum on the Hingunghat plant, drawn up at the suggestion of some officers in Lower Bengal, who are giving the seed a trial in that province. To this Memorandum I have at present but little to add, save that I would desire to urge, as strongly as possible, the importance of establishing seed gardens, and selecting the Hingunghat seed in the manner recommended by Major Trevor Clarke, extract from whose paper on the subject is given in the Memorandum herewith forwarded. If it is desired that Hingunghat Cotton should succeed in other parts of India, it will be found necessary, I am certain, to be most careful in selecting the seed; and, as I attach so much importance to this matter, I may perhaps be excused if I quote here from a letter written to the Secretary to Chief Commissioner Central Provinces on the subject in October 1866:—

"Many gentlemen with whom I have consulted in Bombay, have impressed on me, that without introducing new seed, which must be a work of time, much may be done at once to improve the cultivation of cotton, by carefully selecting the seed grown in our districts.

"Under the present system, the cultivators seldom trouble themselves, when picking the cotton, to choose and reserve the best seed for the next season's sowings. Although in one part of a field the plants may be fine and strong, with large 'bols' of cotton, and healthy seed, whilst in another part, owing perhaps to inferiority of soil, the plants are poor and sickly, and the seed proportionately bad, still the 'kupas' (seed cotton) when picked, is invariably massed together, and no attempt is made to keep the two sorts separate. After the cotton has passed through the gin, it is impossible, I understand, to distinguish the good seed from

the bad, the size of the seed being no criterion of the superiority of its quality, as large seeds are often but the bloated produce of some small, unhealthy plant. The good and bad seed being thus mixed together, much of what would be really valuable for the next sowings goes to the cattle, and a large proportion of what is inferior seed finds its way back to the fields.

"I would, therefore, suggest that during the ensuing season, the land-holders be recommended to take particular care in selecting the best seed for next year's crop. For this purpose a certain number of the finest and healthiest plants, bearing the largest 'bols' should be selected, and the 'kupas' (seed cotton) picked from those plants should be set apart, and the seed obtained from the 'kupas' after cleaning should be reserved for the next season's sowings. A little care in selecting cotton seeds, would, I am convinced, do much to improve our cotton cultivation; and if some of the land-holders could be induced (as I hope hereafter to be able to induce them to do,) to raise cotton for seed on carefully tended garden lands, a still greater improvement might be secured. Perhaps district officers might be able to assist by planting carefully selected seeds in the rich fields which are sometimes attached to the public gardens."

4. I should be glad if the importance of selecting the seed could be impressed upon all gentlemen who have undertaken experiments with Hingunghat Cotton in Bombay. And, I am particularly anxious, that the plan recommended by Major Trevor Clarke should be followed in regard to Hingunghat Cotton sown in the Bombay Presidency, because, much of the seed supplied by me is not as pure and healthy as I could wish it to be. And by this, I mean, it is not seed that has been grown specially in Government seed gardens, and selected on the principle which I desire so strongly to advocate. Such gardens have been established in some places, but the produce is not sufficient for one-twentieth part of the demands that have been made upon me this season. The seed sent is that generally used in the Hingunghat district. It has been purchased in the best villages celebrated for their cotton, but, as I have already explained, this seed is susceptible of much improvement, and hence my anxiety for the adoption of Major Trevor Clarke's plan in all the cases in which this seed has been supplied.

No. XXII.—USE OF COLORED OR IMPRESSED ONE ANNA STAMP PAPER FOR RECEIPTS.

From Major C. H. Hall, Deputy Commissioner, Jullundur, to T. D. Forsyth, Esquire, C. B., Commissioner and Superintendent, Jullundur Division, No. 399, *dated 9th December* 1868.

* No. 58 dated 5th September 1868, from Judge Small Cause Court Jullundur.
No. 1291 dated 7th September to Ditto.
" 60 dated 10th " from "
" 1322 dated 12th " to "
" 63 dated 14th " from "
" 1331 dated 15th " to "
" 82 dated 21st November from "

Correspondence marginally * noted forwarded in original, with a view to obtain the authoritative ruling required by Mr. Penn, Judge Small Cause Court, on the point mooted. The undersigned agrees with Mr. Elsmie, that Section 5, Act X of 1862, does not prohibit the use of a colored or impressed one anna stamp for receipts, but merely lays down that adhesive stamps "may" be used, this being no doubt for greater convenience to the public. "Receipts" come under Schedule A, Act X of 1862, and there appears to be no reason why they should not be written on blue and black stamps recently introduced for all instruments under Schedule A, if the use of stamped paper be preferred to that of adhesive stamps. It appears to me to be optional so long as the conditions of the law with regard to the use of a one anna stamp be fulfilled. Special kinds of stamps are issued from the Stamp Office for different purposes; and for receipts, the particular kind of adhesive stamp denoted as "Bill and Receipt Stamp" or the blue and black stamp paper for instruments under Schedule A, are available, Section 5, Act X of 1862, allowing the use of the adhesive stamp if preferred.

From J. H. Penn, Esquire, Judge Small Cause Court Jullundur, to F. E. Moore, Esquire, Officiating Deputy Commissioner Jullundur, No. 58, *dated 5th September* 1868.

With reference to his vernacular proceeding dated 1st instant, forwarding a copy in English of the Deputy Commissioner's proclamation of 1st July 1867, solicits the favor of being informed on what authority or order the following passage is based. "Although Section 5 of Act X of 1862 permits the use of adhesive stamps for receipts, the use of one anna law

"stamps is not prohibited; on the contrary, the public are advised to use "the latter description of stamp for the purpose of receipts" &c.

Decree-holders file receipts in this office on one anna impressed law stamps, and plead the Deputy Commissioner's proclamation for dispensing with adhesive receipt stamps; and as the undersigned believes that the provisions of Section 5, Act X of 1862, are opposed to the terms of the proclamation, he would be glad to learn whether the Deputy Commissioner was guided by any ruling of the Chief Court or Financial Commissioner. The principle that stamps must be used only for the purposes defined by the Stamp Act is understood to be binding. If an impressed law stamp of one anna may be used in lieu of an adhesive receipt stamp of one anna, so may a postage stamp of one anna, or a hoondee stamp of one anna.

PROCLAMATION.

The attention of the public is called to the following points in regard to the Stamp Act:—

I. Although Section V, Act X of 1862, permits the use of adhesive stamps for receipts, the use of 1 anna law stamps is not prohibited; on the contrary, the public are advised to use the latter description of stamp for the purpose of receipts. They will thereby save the cost of paper; and the difficulty of proving the genuineness of the receipt will be lessened. Courts of Justice should advise parties about to file receipts to execute them on law stamp paper.*

II. Foreign Bills (Hoondies &c.,) require to be stamped on their being negotiated within British territory. Adhesive stamps should be used for this purpose.

III. Under Section LV of the Act, a share, not exceeding one-half, of every fine will be awarded by the Court imposing fines to every informer who shall give information which may tend to the conviction of persons who have been parties to documents which do not bear the proper stamps.

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* NOTE.—It is hoped that this para. of the proclamation will make receipts more popular documents than they are at present.

An ignorant cultivator ought to value a receipt on a full sheet of properly stamped paper when he would care little for a scrap of country paper bearing an adhesive stamp.

From J. H. Penn, Esquire, Judge Small Cause Court, Jullundur, to Major C. H. Hall, Deputy Commissioner, Jullundur, No. 82, *dated* 21*st November* 1868.

The correspondence noted on the reverse, and herewith forwarded in original for facility of reference, has remained undisposed of at the suggestion of Mr. Moore, who wished the question involved in it to be laid before Mr. Elsmie. As the latter officer has not returned, and the case of execution of decree has been kept pending hitherto, begs the favor of his deciding the point, or referring it for the orders of higher authority. The question is, whether a law stamp of one anna is to be used in lieu of a receipt stamp of one anna for legalizing receipts for sums exceeding 20 rupees, in opposition to the provisions of Section 5 Act X of 1862. Mr. Elsmie issued a proclamation on 1st July 1867, advising the public to use law stamps in preference to receipt stamps for the purpose of receipts; and such receipts are sometimes presented at this office.

Docket No. 58 of 5th September 1868, to Deputy Commissioner Jullundur.
Docket No. 1291 of 7th Sept. from Ditto.
Do. " 60 of 10th " to "
Do. " 1322 of 12th " from "
Do. " 63 of 14th " to "
Do. " 1331 of 15th " from "
and copy of proclamation issued by the Deputy Commissioner of Jullundur, dated 1st July 1867.

The undersigned believes such receipts to be invalid, as they are not sanctioned by any provision in the Stamp Law.

An authoritative ruling is therefore very necessary to remove doubt.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, to T. D. Forsyth, Esquire, C. B., Commissioner and Superintendent Jullundhur Division, No. 3 *dated 2nd January* 1869.

In reply to your No. 137 dated 12th ultimo, relative to the use of one anna law stamps for receipts in lieu of adhesive stamps, I am directed to state that the opinion expressed by Mr. Elsmie and Major Hall, in which you concur, appears to the Financial Commissioner quite correct.

2. Mr. Egerton is of opinion that there is nothing in Section 5 of the Stamp Act to make the use of adhesive stamps for receipts compulsory, and therefore any stamped paper which may be used for documents mentioned in Schedule A, may be used for a receipt. Your attention is drawn to the ruling to this effect in para. 10 of the annexure to Book Circular 11 of 1866.

3. Since the introduction of a distinct kind of stamped paper for documents requiring a stamp under Schedule A, the use of "law stamps" for receipts cannot be permitted, but all receipts executed on such paper previous to the change are valid so far as the sufficiency of the stamp is concerned.

No. XXIII.—MORTALITY AMONGST CATTLE, CAUSED BY EATING JOWAR STALKS.

Extract from a letter, No. 774 *of* 22*nd October* 1868, *from T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab.*

As the death of cattle from eating jowar stalks has been so general and appears to be caused by an insect familiar to the people, His Honor thinks it is very desirable that all the reliable information procurable on the subject be collected and submitted by those officers in whose districts it has occurred, and wherever microscopes may be available, in the possession of medical officers and others, every effort should be made to have a considerable number of stalks of the description found to be injurious carefully examined immediately on their being cut, as if detained for any length of time the cause of injury may have disappeared.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to the Deputy Commissioners Kurnal, Lahore and Ferozepore, Nos. 5693—4—5 *of* 21*st November* 1868.

With reference to his statement, that cattle had died from the effects of eating jowar stalks, forwards extract from Government letter No. 774 of 22nd October, and requests that the necessary enquiries may be made, and the cause of death if possible be demonstrated, and not merely conjectured to arise from eating jowar stalks.

From Major J. Parsons, Deputy Commissioner Kurnal, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 3 *of* 4*th January* 1869.

I have the honor to reply to your docket No. 5693 of 21st November.

2. Immediately on receipt of your docket, orders were issued to the Tehseeldars to obtain if possible some of the poisonous jowar stalks from which mortality among cattle had been reported, but it was found to be too late to procure any specimens as the stalks which are poisonous are of stunted growth, and wither away by the end of October. I had however pre-

vious to the receipt of your letter seen a few specimens which contained some very minute insects, a few in each stalk; they were so small, yet travelled so quickly when exposed by opening out the stalks of the churrie, that it was almost impossible to get hold of them without (so to say) obliterating all trace of their existence; whether a few such minute insects in some of the churrie stalks would be sufficient to cause the death of cattle eating the churrie, or whether it is merely the withered churrie itself that is injurious, there is not at present reliable information, to decide; but it may be stated that the native community are unanimous in attributing the injury to the cattle eating the withered churrie solely to the presence of the insects in the stalks.

3. The symptoms of illness exhibited by cattle thus poisoned are, swelling of the stomach and frothing at the mouth, followed by convulsions and death, all occurring within about an hour from the time the churrie is eaten. The treatment adopted is the administering of ashes in water, or oil for the purpose of loosening the bowels, and it is said that when this is effected the animals sometimes recover.

4. The deaths of cattle from eating diseased churrie are said to have been very numerous in the district during the months of September and October. Care will be taken that on any future occasion of the appearance of such disease in the churrie, that some specimens of the stalks are preserved for analysis.

From J. W. Smyth Esquire, Deputy Commissioner Lahore, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 158 *of—January* 1869.

I have the honor to state that on receipt of your No. 5694 dated 21st November last, I issued orders to the Tehseeldars of this district to send into Lahore specimens of jowar stalks of the kind found to be injurious to cattle. The jowar crop however had been generally cut before the orders reached the Tehseeldars, and only the Tehseeldar of Choonian sent in specimens. These were at once forwarded for examination to Dr. Brown, together with a copy of the extract from the Secretary to Government's letter No. 774 dated 22nd October 1868. A copy of Dr. Brown's reply dated the 18th ultimo, is annexed.

2. It was too late to act on Dr. Brown's recommendations, to collect the stalks in stoppered bottles, or to depute a medical officer to examine the standing crop and the affected cattle; but I called for reports on the points adverted to in the concluding para. of his letter, and I will here briefly state the substance of the information which I have been able to obtain.

3. There is no doubt that very many cattle suddenly died during the past hot season from eating jowar stalks. Zaildars, lumberdars and zemindars in all parts of the district testify to this fact. The mortality appears to have been greater in the manjha or high central lands of the Baree Doab than in the low lands along the banks of the rivers. It is stated by the Tehseeldar of Lahore that the mortality was particularly observable in Assoy and Katik among cattle eating jowar on which dew had fallen. It is said that horses were not affected by eating jowar stalks, and that the mortality was confined to animals which chew the cud.

4. The symptoms observable in the affected cattle come on very suddenly, sometimes even while the animal is still eating the jowar, but more frequently within half an hour.

5. The period within which death results appears to vary with the quantity of jowar eaten. Occasionally it occurs within two hours from the time the jowar has been eaten, but usually within 3 to 6 hours, and sometimes not for 10 or 12 hours. If the animal lingers on beyond this period it generally recovers.

6. The reports which I have received agree in the main in regard to the chief symptoms observable. Very soon after the jowar has been eaten the stomach or abdomen swells, (this appears to be the first symptom), the animal falls down in great pain, with the body trembling and the feet beating the ground; a green fluid runs from the nose, and there is a watery running at the mouth and eyes; there is also great difficulty in breathing. Purging from the bowels is not one of the symptoms; on the contrary, the symptoms appear to be relieved when the bowels are opened.

7. The natives are not successful in their treatment of the disease. A favorite method of treatment is to give the animal a dose of mud, or earth mixed with dirty water. Another method, apparently more rational, is to administer a dose of oil, or ghee, or stale curds. It is supposed also that relief is given by driving the animal into a chuppur, or tank, and making it

lie down in the water. Any treatment to be successful must be taken in hand at once, as soon as the first symptoms appear.

8. Without further investigation it is not possible, I think, to say with any certainty to what cause the disease is to be ascribed. The zemindars all connect it with the dryness of the season, and the common belief among them is that in seasons of drought some kind of a poison is developed in the jowar stalks. But as to what the poison is, or what form it assumes, nothing is really known, some believe that the sap of the plant becomes poisonous; others that minute poisonous insects are developed in the leaves of the plant: others again, disbelieving the poison theory, attribute the deleterious results to the mechanical effect on the coats of the stomach of the jowar leaves, which when dried up present hard sharp edges, like the edge of a sword;—all this is mere conjecture however. Even those who hold the insect theory admit that they have never seen any peculiar insects in stalks known to be injurious.

9. During my tour through the district in November and December last, I made special enquiries into this matter, and the following appears to me to embrace all that is really known for certain on the subject by the people of this district:—

I. There has been great mortality among cattle during the past hot season from eating jowar stalks.

II. Mortality from this cause is nothing new, and is well known by the natives to occur in every hot season in which little or no rain falls.

III. There is no outward mark by which it can be said before-hand that a particular jowar field, or a particular jowar stalk, is poisonous. In other words, no one can say from looking at two stalks that one is poisonous and the other not.

IV. In animals affected, the symptoms shew themselves very soon after the stalks have been eaten. The first symptom is swelling of the belly, accompanied by pain. The other symptoms have been described above.

V. The disease is very fatal. Very few of the animals attacked recover, death usually occurs within 3 to 6 hours after the stalks have been eaten, occasionally within a shorter period, and sometimes not for 8 or 10 hours. If the animal survives for a longer period than this, it generally recovers.

10. I have only to state, in conclusion, that the impression made in my mind by the enquiries I have made, is that the jowar stalks are not really poisonous, and that their deleterious effects arise from ordinary causes, namely, from indigestion or sudden fermentation of the food in the animal's stomach. It is to be remembered that the mortality occurred in the hot season, when there was little or no rain, and it can hardly be a matter for much surprise that cattle exposed all day to a burning sun, with little or no water to drink, and accustomed only to the burnt up grass of a dry hot season, should suffer, especially at first, from eating green succulent food like young jowar stalks. It is not an uncommon thing even in England for cattle to swell up when first put to green grass after being accustomed to dry fodder, and a predisposition of this kind must be much stronger in this country, where cattle are exposed to much greater heat, and where the change of diet from the hard, scant, unnutritious grass of a dry hot season, to the green stalks of a field of jowar is much more marked. This view receives some confirmation from a fact noted by the Tehseeldar of Kussoor, that it is only from eating green stalks, and not from dry stalks, that the cattle suffer. It accords also with the fact that relief appears to be given when the bowels are opened.

11. If this view is correct, it might be feasible to issue some simple instructions for the guidance of the zemindars in treating cattle affected. The subject however requires further investigation by a professional man.

From Dr. T. E. B. Brown, Chemical Examiner Lahore, to C. R. Hawkins Esquire, Assistant Commissioner Lahore, dated 18*th December* 1868.

With reference to your office letter No.   dated 14th December, I have the honor to state that the jowar was sent to me packed in the least favorable manner for the discovery of any living insects in it.

It was placed in a piece of old wax cloth, which was partially sewn up, but one corner was left open, and the cloth was porous.

I would recommend that a stoppered bottle with a wide mouth should be taken to the field affected, that the jowar should be placed in this as soon as it was cut, and that the stopper be fixed in by wax, lac, or flour paste, on the spot.

But after all, it is doubtful whether an examination of the jowar at a distance from the spot will lead to any satisfactory results, and it would be very advisable for Government to direct a medical officer to examine the question on the spot.

1st. Because the death of the cattle may really have been caused by some poisonous plant growing with the jowar; thus it was reported that the Artillery horses were narcotised on the Black Mountain by eating a grass, the deleterious effects of which had long been known by natives; but on this grass being sent for examination it was found to belong to a harmless kind, while Mr. Ribbentrop, who had visited the spot, found that the Indian hemp *Cannabis Indica* (bhang) grew in profusion on the spot, and this had probably caused the symptoms complained of.

2nd. The death of the cattle may not improbably be caused at this season of scarcity by want of food, and the jowar only facilitated the death by its want of nutritive power, as it is evidently withered; this could only be ascertained by a post mortem examination of the cattle, or by a careful consideration of the symptoms which preceded death. Should it not be convenient to send a medical man to investigate the disease on the spot, I should feel obliged if you would ascertain and let me know the answers to the following questions.

1. How long did each animal live after first eating the jowar.
2. How long was each evidently ill before it died.
3. What were the first symptoms noticed."
4. Did stupefaction occur or exhaustion.
5. Did purging, or discharge from the nose occur.
6. Describe any other symptoms which were noticed.

From Major P. Maxwell, Deputy Commissioner Ferozepore, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 91 *of* 30*th January* 1869.

In reply to your No. 5695 of 21st November 1868, regarding jowar stalks, I beg to forward the required report drawn up by Dr. Lethbridge, late Civil Surgeon of this district.

From Dr. A. S. Lethbridge, late Civil Surgeon Ferozepore, to Major P. Maxwell, Deputy Commissioner Ferozepore, dated 25th January 1869.

In reply to your office docket No. 1199 of 27th November 1868, I have the honor to inform you that, early in December last, I made a careful microscopical examination of the jowar stalks supposed to have poisoned some cattle. But my investigation was abruptly brought to a close by my being appointed to this station. The only microscopical object which I could detect that was at all abnormal, was an insect, of which a rough sketch is given in the margin. This creature belongs to the class Insecta, order Rhynchota, sub. order Homoptera. The males have wings, as in this specimen, and when full grown appear to be about 1—20th of an inch in length. The females appear to be a fleshy mass, oval in shape, and nearly destitute of limbs, they have no wings, and appear to move with difficulty. They inhabit the tubular sheaths of the dried and withered leaves; the more withered the plant, the more numerous these insects appear to be. Insects of this order are not known to be poisonous.

I took the opportunity of asking the advice of *the officer in charge* of the Botanical Gardens of the North Western Provinces. In his letter to me, he stated that no cases of cattle poisoning from eating dried and withered jowar had yet been investigated, so that he was unable to give me any help. The method of examination which I proposed following was in the 1st instance to feed healthy cattle on the suspected jowar, and to watch the effect, for as yet no case of the kind has been seen by any one capable of judging. If it happened to be poisonous we could then see whether it resembled, in its effects, any vegetable poison already known.

2nd. To determine by chemical analysis the nature of the poison. It is very possible that the continued drought and heat might have caused some chemical change to take place in the plant which rendered it poisonous. This view of the case is supported by the fact that it is alleged to be poisonous only when the plant is stunted in its growth and its leaves dried up.

I am sorry that I have not been able to carry out this investigation to the extent that I should have liked.

Note by R. E. Egerton Esquire, Financial Commissioner Punjab.

It is impossible to investigate the matter any further at present. The conjectures of the Deputy Commissioner of Lahore are probably not far from the truth.

The following extract from Sproule's Practical Agriculture may throw some light on the nature of the disease—pages 606-7 :—" Distension of the " rumen from food. When describing the digestive apparatus of cattle, the " rumen was seen to be a depository for storing the imperfectly masticated " food, until, by the process of rumination, it should be more thoroughly " comminuted and fitted for the action of the gastric juice in the abomasum. " But when the animal is put into a luxuriant pasture, or otherwise supplied " with an unlimited quantity of food, after fasting for some time, an undue " portion is sometimes stored up, and distension and consequent excruciating " pain in the rumen are the result.

" This distension of the rumen frequently occurs among cattle, and as the " symptoms closely resemble those of distension from quite another cause, " much caution must be used in the treatment of it. The stomach is some- " times distended by the fermentation of its contents, and the consequent " quantity of gas evolved ; but distension from too much food may be dis- " tinguished from this by passing the probang into the rumen, and, when " it is distended with gas, a sudden and violent rush of the imprisoned air will " follow. They may also be distinguished from each other by ascertaining the " nature of the food to which the animal had access for some time previous, " and the probable quantity of that food consumed ; but it is always proper to " use the probang, not only to determine this point, but to ascertain the degree " to which the rumen is distended by the excess of food consumed.

" When the distension has only taken place to a limited extent, and " does not threaten a fatal termination, bleeding and active physicking will " generally be sufficient, and the distension soon be allayed. Stimulants will " also be found useful as exciting the stomach to action, and they may be " administered with the purgatives. When these have taken effect, and the " process of rumination again resumed, no fears need be entertained re- " garding a favorable result.

" When, however, the symptoms indicate the presence of the most " intense distension, such as continual shifting of posture, moaning, swelling

" at the sides, the flank feeling hard and not yielding to pressure, the case " is serious, and admits of no delay. Rumination is suspended, and the other " symptoms continue to increase. In this case mechanical relief must be " afforded.

" Should the probang enter a little way into the stomach, and the opera- " tor be able to move it about, he will have proof that, although the paunch is " sufficiently distended to produce severe annoyance and considerable danger " to the animal, it is not stretched to the utmost; and he will consider whe- " ther he may not first try the effect of mild measures, which he will be " especially encouraged to attempt if he finds that the food is of a rather light " nature. But if the probang cannot be introduced at all into the rumen, or " the food eaten be heavy, an incision should be made into the rumen through " the left flank, and thus extract the contents. This mode of proceeding, " however, is recommended only in cases of extreme distension with heavy " food. The rumen of cattle, having few blood-vessels and nerves, will endure " very severe treatment without considerable injury. The principal danger is, " that a portion of the food will, during its extrication from the stomach, fall " into the abdomen, and there remain a source of irritation, and often the " unsuspected cause of serious and fatal disease."

From Dr. A. S. Lethbridge, Civil Surgeon, Kurnal, to Major J. Parsons Deputy Commissioner Kurnal, No. 165 *dated* 24*th September* 1869.

In reply to your docket No. 698 of the 8th instant, forwarding a sample of jowar alleged to be poisonous, I have the honor to state, that although the late seasonable showers have made this an unfavorable year for examining this subject, I think I am now in a position to set the question of the supposed poisonous insect at rest. The microscopical insect first noticed by me at Ferozepore in November 1868, and classed under the Order Rhynchota, and Sub-order Homoptera, has again come under my notice this year. In my former examinations I had no opportunity of judging as to whether it existed in good churry or not.

The following are some conclusions at which I have arrived with reference to this insect :—

1. That it exists in both the flourishing and the dried up plant ; if anything, it predominates slightly in the latter.

2. That it exists in much larger numbers in dry seasons ;—rain being very fatal to these insects, as is shown by the numbers that die after a heavy shower.

3. That they do not produce any deleterious effects if eaten even in large quantities by cattle.

To prove this, let me give two examples—

(a). A quantity of luxuriant jowar in which these insects predominated was given to a calf 18 months old, without producing any unfavorable results.

(b). A small plot of jowar about 3 feet high and grown without irrigation was lately nearly eaten by a couple of cows ; few days afterwards these same cows were again found in the field. From this I am led to conclude that the jowar did them no harm.

4. The idea that the insect is the poisonous agent in the jowar being erroneous, it remains to be proved, whether (a) the deleterious results can be referred to a poison in the plant itself—caused perhaps by the great heat and drought producing a chemical change ; and it is curious to notice

that this change is associated with a stunted growth, a diminished vitality causing a total cessation of the germinating power, but no sooner is the power of germination resumed after a good shower of rain, than the jowar, which was once poisonous, becomes harmless ; (b), or can the deleterious results be attributed to a purely mechanical effect produced by the sharp edged leaves of the dried plant on the stomach and alimentary canal?

This is an unfavorable year for investigating this subject ;—the cases of poisoning being few and perhaps uncertain. But if an opportunity again occurred it would be advisable for Government to direct a Medical Officer to examine the question, with the view not only of detecting the cause, but of discovering if possible a proper method of treatment.

No. XIV.—RIVER BOUNDARY JURISDICTION, FEROZEPORE AND LAHORE DISTRICTS.

From Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Lahore Division, to W. Coldstream, Esquire, Officiating Secretary to Financial Commissioner Punjab, No. 350 *of* 24*th December* 1868.

I have the honor to forward for perusal and orders, a letter from the Deputy Commissioner of Lahore, No. 544 of 17th instant, on the subject of dealing with questions of alluvion and diluvion, as connected with the villages bordering the Sutlej in the Ferozepore and Lahore districts.

2. I have conveyed my opinion on the general question as to the decision of the cases, in my letter No. 262—2447 of 28th September last, but Mr. Smyth seeks a particular ruling with reference to the jurisdiction of the Lahore and Ferozepore districts.

3. With all its drawbacks, I am of opinion that the deep stream rule is the best to abide by in determining district boundaries, as the case stands at present; and I would recommend that the course indicated in the Circular (No. 16 of 1868) of the Board of Revenue North Western Provinces, quoted by the Deputy Commissioner of Lahore, be acted upon at once.

4. I consider that it would be very advisable hereafter to revise the boundaries of the two districts, and no longer to limit jurisdiction to the river bound, but orders are required for present and immediate action, and I have therefore recommended that the Deputy Commissioners of Lahore and Ferozepore be instructed to proceed in accordance with the Circular above quoted.

From J. W. Smyth Esquire, Deputy Commissioner Lahore, to Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Lahore Division, No. 544 *of* 17*th December* 1868.

You are aware that the procedure to be followed in dealing with questions of alluvion and diluvion on the Sutlej has for some time been under consideration, and that definite rules on the subject are very much required. Mr. Saunders, Settlement Officer, has addressed me on the subject, in his letter No. 780 of 1st instant, a copy of which he has forwarded to you, and

my object in now addressing you is to request that, pending the issue of general orders on the subject, you will be good enough to lay down some rules for the guidance of the Deputy Commissioner of Ferozepore and myself in determining the limits of our respective jurisdiction.

2. The subject of river action divides itself naturally under two heads, one relating to the determination of the boundaries of districts, or other administrative sub-divisions, the other relating to the determination of private rights in the lands affected by the river. The latter class of questions can, in the present state of things, only be authoritatively dealt with in the ordinary course of law by the Civil Courts, and their decision must be mainly regulated by the custom found to prevail on the river.

3. But the determination of district boundaries is an administrative question, and it is very desirable that some definite understanding should be come to between the Lahore and Ferozepore district authorities in regard to the principles which are to guide them in determining the limits of their respective districts.

4. At present the deep stream is understood to be the boundary, but only in a general kind of way. In former years when the land on the Ferozepore side was under the British Government, and that on the Lahore side under the Sikhs, the deep stream was no doubt strictly adhered to as the boundary. But now that both banks are under British rule, the deep stream is not strictly adhered to, and a custom has been growing up (only of late it is said) of making the district boundary co-terminous with the boundaries of villages situated on the river banks. Suppose for instance a village in the Lahore district whose lands in 1867 were situated wholly on the Lahore side of the river: it is on the Lahore rent roll, and is clearly in the Lahore district. But in 1868 the river makes a set against the Lahore side, and the village is divided right in two, half of the village lying on the Ferozepore side of the deep stream and half on the Lahore side. How is an assistant deputed for alluvial operations to dispose of such a case? Regarding the private rights on the land there is no difficulty; at any rate that is a separate question which I do not at present raise. The only point on which I solicit instructions at present is in regard to the district boundaries; and the question is, does the half of the village transferred to the Ferozepore side of the deep stream belong to the Ferozepore district, or is it to be considered as still belonging to the Lahore district?

5. If the rule of the "deep stream" were to be followed strictly, there would be no doubt on the point, the portion which was transferred to the Ferozepore side would be incorporated with the Ferozepore district. Jyshee Ram, when he was Extra Assistant Commissioner of Kussoor, contended strongly for the deep stream being strictly adhered to as the boundary of the district. It certainly has one great advantage, that being easily determinable there can be little doubt as to district jurisduction, or as to the authorities before whom claims to river land should be made; whereas if the district boundary is to follow the boundaries of villages, and if these boundaries are continually shifting, there is the greatest uncertainty as to jurisdiction. Before determining the district boundary it becomes necessary to determine the private rights in the lands, to see what villages they belong to, and yet how can those rights be determined until it is known what authorities have jurisdiction? In other words, before the district boundary can be fixed, it is necessary to determine the village boundaries, and before the village boundaries can be authoritatively fixed in disputed cases, it is necessary to know in what jurisdiction, that is, in what district, the land is situated.

6. This is the *dilemma* in which the authorities of the two districts are landed in cases where lands are claimed by different villages situated on different sides of the deep stream. The case referred to by Mr. Saunders is of this kind. And such cases must occur so long as the district boundary is held to follow the boundaries of river villages, and not strictly that of the deep stream.

7. On the other hand, there are many objections to following the deep stream strictly as the district boundary. Villages intersected by the deep stream would be placed under a divided jurisdiction, and pay their revenues partly in one district, and partly in the other. Moreover, in disputes about lands there is a tendency among the Putwarees and others to favor the interests of the villages lying on their own side of the river. For instance, suppose there is alluvial land thrown up on the Ferozepore side of the deep stream: it is claimed both by village A. situated on the Lahore side of the deep stream, and by village B. situated on the Ferozepore side of the deep stream. The land in dispute being on the Ferozepore side of the stream, and the deep stream being taken as the boundary of the two districts, the case would fall within the jurisdiction of the Ferozepore Courts. In

such cases it is alleged that there would be a tendency on the part of the Ferozepore authorities (or of the Lahore authorities, if the case were *vice versa)* to favor the village B. situated in their own district. I believe this objection is well founded as regards Putwarees and the inferior ministerial agency.

8. The objections to the district boundary being regulated either by the "deep stream" or by the boundaries of river villages, appear to me so strong and so insuperable that I should prefer to see the same system introduced on the Sutlej in regard to district boundaries as has been followed on the Ravee in regard to tehseel boundaries. The Ravee has been abandoned as the boundary between Purgunnah Shurruckpore and Purgunnahs Lahore and Choonean, and the boundaries of the two latter Purgunnahs have been extended across the Ravee so as to include a narrow strip or fringe of villages on the northern bank. The Ravee by this arrangement flows for the upper half of its course in this district through the Lahore Tehseel alone, and for the lower half through the Choonean Tehseel alone, and there is no room for conflict of authority or jurisdiction between neighbouring Tehseeldars.

9. I do not see why this arrangement should not be followed on the Sutlej. For bridge and ferry purposes the river is considered as falling under the jurisdiction of the Ferozepore authorities; and I would extend the boundary of the Ferozepore district, so as to include a narrow strip of villages along the river bank on the Lahore side.

10. Whatever arrangement be adopted, orders one way or the other are urgently required. The season for dealing with alluvion and diluvion operations has again come round, and again the Tehseeldars and assistants will be sent to the river without any definite rules for their guidance.

11. Whether the "deep stream" or the limits of river villages be taken to determine the boundary of the district, the procedure laid down in the Circular of the Sudder Board of Revenue North Western Provinces, quoted by Mr. Saunders, seems in every way suitable; and if you approve of it, I shall be glad if you will issue orders to that effect to the Deputy Commissioner of Ferozepore.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, to T. H. Thornton, Esquire, Secretary to Government Punjab, No. 48, of 21st January 1869.

I am directed to submit, in original, for the orders of Government, a letter No. 350 of 24th December 1868, from the Commissioner Lahore, with enclosure, on the subject of determining the limits of jurisdiction in cases of alluvion and diluvion in villages bordering on the Sutlej in the Lahore and Ferozepore districts; and to state that, in the Financial Commissioner's opinion, the question of determining the boundaries of districts separated by the river Sutlej, may be settled independently. The question of the rights of land-holders is distinct. The deep stream of the Sutlej has hitherto been considered the boundary between the districts of Lahore and Ferozepore. Mr. Egerton sees no reason at present for altering this boundary.

2. The objections stated in para 7 of Mr. Smyth's letter have some weight no doubt, but they are trifling compared with the objections which exist to the plan of following the boundaries of estates as the boundaries of districts when such a river as the Sutlej intervenes. It is most undesirable that there should be anything resembling a conflict regarding jurisdiction between the Deputy Commissioners of two districts, and unless the deep stream of the Sutlej is maintained as the boundary of the respective districts something resembling a conflict will certainly occur. Mr. Egerton thinks therefore that it is advisable each year after the rainy season, or say on the 1st October, that the Deputy Commissioners of each district (Lahore and Ferozepore) should decide from the reports of their Tehseeldars, or from the reports of such other officers as the Commissioner may direct to survey the river, what changes in jurisdiction have been rendered necessary by the alterations which have taken place in the course of the river; and that all lands, whether islands, recognizable village lands, or alluvial accretions, shall be held to pertain to the jurisdiction of the Deputy Commissioner of the district, which lies on the same side of the deep stream of the river.

3. The question of private rights in those lands will then be decided by the Deputy Commissioner of the district in which the lands may have been thus decided to lie, according to the existing custom. As both sides of the river are in British territory it is comparatively immaterial which Deputy Commissioner decides the cases, and all conflict of jurisdiction will be avoided.

4. The proceedings of the Deputy Commissioners in determining the preliminary questions of jurisdiction may set forth the names of the villages under which the deep stream lies, together with such other known land marks as may exist near the river at the time of the annual survey.

5. When necessary, any transfers from the rent roll of one district to that of another may be reported at once for sanction. This will be required only when revenue paying lands have been transferred bodily from one district to another. Ordinarily such transfers do not occur.

In the case of islands, no transfer of jurisdiction should be made until the course of the deep stream changes decidedly from one side of the island to the other, when the streams are nearly equal, it is undesirable to change the jurisdiction.

From T. H. Thornton, Esquire, Secretary to Government Punjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 198 *of 6th February* 1869.

In reply to your letter No. 48 of the 21st January, I am desired to communicate the approval of His Honor the Lieutenant Governor to the proposal that the deep stream of the Sutlej river shall be deemed the boundary between the districts of Lahore and Ferozepore, and I am to convey authority to the Financial Commissioner issuing instructions for the annual determination of the boundary in the manner described in your 2nd para.

I am desired to enquire whether the Financial Commissioner would recommend the extension of the rule to other districts bordering on the Sutlej, or any other of the Punjab rivers.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton, Esquire, Secretary to Government Punjab, No. 154 *of 2nd March* 1869.

In reply to No. 198 of 6th February, intimates that the proposal to regard the deep stream of the Sutlej as the boundary between adjoining districts, should in the Financial Commissioner's opinion be applied to all districts throughout the course of that river; but as Mr. Egerton is not at

present aware whether inconvenience in respect to jurisdiction has been experienced on other rivers, he is not prepared to suggest the extension of the rule to other rivers.

Note.—In consequence of the foregoing correspondence the following Notifications of Government were published in the Punjab Gazette:—

NOTIFICATION, REVENUE DEPARTMENT.

No. 197, *dated 6th February* 1869.

Under the authority vested in him by Section 1 of Act VI of 1867, the Honorable the Lieutenant Governor is pleased to declare that the deep stream of the river Sutlej shall, until further orders, be the boundary separating the districts of Lahore and Ferozepore.

NOTIFICATION, REVENUE DEPARTMENT.

No. 344, *dated 6th March* 1869.

In continuation of Punjab Government Gazette Notification No. 197 of the 6th February 1869, His Honor the Lieutenant Governor is pleased to declare that the order constituting the deep stream of the river Sutlej, the boundary between adjoining districts, shall apply to all districts, throughout the course of that river.

XXV.—RAMPORE FAIR.

From D. C. Macnabb, Esquire, Deputy Commissioner, Simla, to Colonel R. G. Taylor, Commissioner and Superintendent Umballa Division, No. 1453, *dated* 19*th December* 1868.

I have the honor to forward a return shewing the amount and estimated value of merchandize brought to the Fair at Rampore in November 1868.

2. The total value of merchandize brought to the fair in 1868 was Rupees 1,87,044, as compared with Rupees 2,00,133-10-0 brought in 1867, showing a decrease of Rupees 13,089-0-0.

The cash for purchases in 1868 was Rupees 57,212, and in 1867 Rupees 69,395-14-0, being decrease in 1868 of Rupeees 12,183-14-0.

4. The merchandize and cash aggregated in 1868 Rs. 2,44,256, against 2,69,529, in 1867, or a decrease of Rs. 25,273-8-0 in 1868.

5. The Traders who attended the Fair in 1868 were 13,396, against 12,408 in 1867, showing increase of 988 in 1868.

6. There is a marked falling off in the value of Pushum, Brass Vessels, and Jewels; and an increase in the value of Wool, Churrus, Borax, and Sambur Salt.

It is probable that the fair held at Palumpore has assisted in causing a reduction in the value of goods. The remarkable falling off in the quantity of Pushum offered this year at Rampore, may in a measure he accounted for by the fact that this finest class of wool is in more demand for the Punjab markets—Loodiana, Umritsur, &c., than those lower down the country; consequently Palumpore is a much more convenient point to which to carry this commodity for sale than is Rampore, as the former is more accessible to the Punjab merchants. The coarser kinds of Wool however seem to have been brought in increased quantities to Rampore, and to have fetched good prices.

Statement shewing Merchandize brought to

No.		Commodity.	ROUTES. From Kunawur Ilaka Busahir, Yarkund, Cheen and Ladakh. Quantity. M.	S.	C.	Estimated Value. Rs.	From Plains, Amballa, Jugadhree, Mundee Sookeit. Quantity. M.	S.	C.	Estimated Value. Rs.	A.	P.	From Kooloo. Quantity. M.	S.	S.	Estimated Value
1		Wool, ...	2,582	5	2	51,643	...	...	..	...	...	...	30	...	...	600
2		Pushum, ...	975	13	...	39,013	...	...	...	...	...	...	...	...	...	...
3		Sohaga, Borax, ...	1,013	4	8	6,332	...	...	...	...	...	...	...	...	...	...
4		Salt Sambur, ...	547	3	9	2,189	...	...	...	...	...	...	...	...	...	...
4½		,, Lahoree, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5		Churrus, Yarkundee,	198	32	...	11,928	...	...	...	...	...	...	...	...	...	...
6		Neoza Cheelgoza, ...	23	25	6	177	...	...	...	...	...	...	...	...	...	...
7		Zeera, ...	8	13	6	167	...	...	...	...	...	...	...	...	...	...
8		Bujra, Atta, ...	91	3	6	228	426	...	...	1,065	...	...	33	...	...	83
9		Atta, Wheat, ...	55	13	4	221	545	8	...	2,181	...	...	186	8	...	745
10		Kuroo, ...	53	32	...	215	25	...	...	100	...	...	15	...	...	60
11		Puttee, Lang puttoo,	N.719	...	...	2,876	...	...	...	...	...	...	N.200	...	...	800
12		Goodmas and Daroos,	N.1037	...	...	4,148	...	...	...	...	...	...	N.30	...	...	120
13		Numdas, ...	N.59	...	...	177	...	...	...	...	...	...	...	...	...	...
14		Chowree, Yaks tails,	N.68	...	...	136	...	...	...	...	...	...	...	...	...	...
15		Ghoonts, ...	80	...	...	4,000	...	...	...	...	...	...	No.2	...	...	100
16		Firoza, Turquoise, ...	17	4	...	174	...	...	...	...	...	...	...	...	...	...
17		Kilta, Leather, ...	No. 211	...	...	211	43	...	...	43	...	...	...	...	...	...
18		Juree Dhoop, ...	..	...	...	...	2	...	...	6	..	...	...	...	...	...
19		Plaintains, ...	No. 14	13	...	44	...	...	...	...	...	...	...	...	...	...
20		Kalleen, Carpets, ...	No. 18	...	...	81	...	...	...	...	...	...	...	...	...	...
21		Tea, ...	...	7	8	15	...	...	...	...	...	...	...	...	...	...
22	13,396	Oorud Dall, ...	21	30	...	87	123	8	...	493	...	...	12	...	...	48
23		Yaks, ...	No. 3		...	75	...	...	..	...	...	...	...	...	...	...
24		Kiltas, Bamboo, ...	...	...	...	...	...	...	...	...	...	...	N.200	...	...	13
25		Honey, ...	...	...	...	...	2	20	...	31	...	...	1	...	...	13
26		Wax, ...	...	3	8	2	...	...	...	...	...	...	...	20	...	10
27		Ghee, ...	3	12	...	66	32	...	...	640	...	...	120	...	...	2,400
28		Charcoal, ...	24	Kiltas.		9	...	...	...	...	...	...	...	...	...	...
29		Rice, ...	...	...	...	...	325	...	...	1,300	...	...	40	...	...	160
30		Do., Basmuttee, ...	...	...	...	...	30	...	...	150	...	...	48	...	..	240
31		Salt, Katha, ...	...	...	...	...	290	...	...	725	...	...	25	...	...	63
32		Huldee, ...	...	...	...	...	20	...	...	200	...	...	...	...	...	...
33		Spices, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34		Khand, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35		Fruits, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36		Tobacco, prepared,...	...	...	...	...	24	...	...	150	...	...	...	...	...	...
37		Ditto, ...	...	...	...	...	16	...	...	80	...	...	20	..	...	100
38		Indian Corn Atta,...	...	...	...	...	100	...	...	250	...	...	...	...	...	...
39		Goor, ...	...	...	...	...	40	...	...	320	...	...	...	...	...	...
40		Gold, ...	...	...	...	...	64	Tola		1,024	...	...	...	...	...	...
41		Jewels, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42		Vessels, Copper, ...	...	...	...	...	50	...	...	2,500	...	...	...	...	...	...
43		Do., Brass, ...	...	...	...	...	80	...	...	4,000	...	...	...	...	...	...
44		Just, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45		Bell Metal,	...	...	...	...	20	...	...	1,200	...	...	...	...	...	...

Rampore Fair for sale in November 1868.

From Bussahir.		*Total.*				*Rate per Maund.*	
		1868.		1867.		1868.	1867.
Quantity. M. S. C.	Estimated Value.	Quantity. M. S. C.	Estimated Value. Rs. A. P.	Quantity M. S. C.	Estimated Value. Rs. A. P.	Rs. A. P.	Rs. A. P.
12	240	2,624 5 2	52,483	2,055 12 ...	41,115	20	20 ... ...
...	...	975 13 ...	39,013	1,294	77,640	40	60 ... ...
...	...	1,013 4 8	6,332	140 32 ...	704	6 4 ...	5 ... ...
...	...	547 3 9	2,189	92	368	4	4 ... ...
...	...	... ...	... ...	28	196	...	...
...	...	198 32 ...	11,928	126	10,080	60	80 ... ...
...	...	23 25 6	177	110 32 ...	554	7 8 ...	5 ... ...
...	...	8 13 6	167	...	...	20	...
47 20 ...	119	597 23 6	1,495	...	...	2 8 ...	...
87	348	873 29 4	3,495	800 6 ...	200	4	2 8 ...
48 32 ...	195	142 24 ...	570	39 32 ...	199	4	5 . ...
N.286	1,144	1,205	4,820	N.412	1,648	4 each	4 each
N.261	1,044	N.1,328	5,312	1,624 N. ...	8,120 ...	4 each	5 each
...	...	N.59	177	N.85	213	3 each	2 8 ,,
...	...	N.68	136	N.30	75	2 each	2 8 ,,
...	...	N.82	4,100	N.75	3,750	50 each	50 each
...	...	N.174	174	...	...	1 each	...
...	...	N.254	254	...	...	1	...
...	...	2	6	6 32 ...	17	3 2 ...	2 8 ...
...	...	N.1,413	44	...	...	... ... 6 each	...
...	...	N.18	81	...	...	4 8 each	...
...	...	... 7 8	15	...	...	2 per seer	...
19 30 ...	79	176 28 ...	707	155 28 ...	487	4	3 2 ...
...	...	... 8 ...	75	...	...	25	...
...	...	N.200	13	N.250	15 10 ...	... 1 each	1 each
5 8 ...	65	8 28 ...	109	11 8 ...	140	12 8 ...	12 8 ...
... 13 ...	7	... 36 8	19	2 24 ...	52	20	20 ... ...
12 16 ...	248	167 28 ...	3,354	206 8 ...	4,121	20	20 ... ...
...	...	24 Kiltas.	9	...	...	... 6 kiltas.	...
23	92	388	1,552	358 34 ...	1,121	4	3 2 ...
...	...	78	390	101 24 ...	508	5	5 ... ...
...	...	315	788	50 16 ...	126	2 8 ...	2 8 ...
...	...	20	200	25 8 ...	202	10	8 ... ...
...	...	...	...	22 16 ...	896	...	40 ... ...
...	...	...	...	26 32 ...	429	...	16 ... ...
...	...	...	...	11 24 ...	232	...	20 ... ...
...	...	24	150	...	...	6 4 ...	...
37	185	73	365	83 21 ...	418	5	5 ... ...
...	...	100	250	...	...	2 8 ...	...
...	...	40	320	145 24 ...	910	8	6 4 ...
...	...	64 tola.	1,024	...	...	16 per tola.	...
...	...	...	...	...	15,525	...	...
..	...	50	2,500	48 1 ...	2,882	50	60 ... ...
...	...	80	4,000	177 18 ...	8,873	50	50 ... ...
...	...	...	...	4 4 ...	82	...	...
...	...	20	1,200	42 24 ...	2,556	60	60 ... ...

Statement shewing Merchandize brought to

No.		Commodity.	ROUTES. From Kunawur Ilaka Busahir, Yarkund, Cheen and Ladakh. Quantity. M.	S.	C.	Estimated Value. Rs.	From Plains, Amballa Jugadhree, Mundee, Sookeil. Quantity. M.	S.	C.	Estimated. Value. Rs.	A.	P.	From Koolos. Quantity. M.	S.	C.	Estimated Value.
46		Vessels, Earthen, ...	...	...	...	...	No.11	...	.	11	...	...	...	...	...	...
47		Moonga, Coral, ...	...	...	...	...	900 T	o	las	900	...	...	...	...	...	...
48		Oil, ...	...	...	...	...	30	...	...	375	...	...	4	..	...	50
49		Chukores, ...	...	...	...	...	N.2	...	...	...	8	...	...	...	...	...
50		Kulawa, ...	...	...	...	...	5	...	...	16	...	...	...	...	...	...
51		Potatos, ...	...	...	...	...	3	...	...	6	...	...	...	...	...	...
52		Dall, Moong, ...	...	...	...	..	20	...	...	100	...	...	...	...	...	...
53		Pomegramates, ...	...	...	...	...	1	...	..	10	...	..	...	...	...	...
54		Silk, ...	...	...	...	...	...	1	4	15	...	...	...	...	...	...
55		Chillies, ...	...	...	...	...	...	21	...	7	...	...	...	...	...	...
56		Gram, ...	...	...	...	...	20	...	...	50	...	...	...	...	...	...
57		Sheera, ...	...	...	...	...	20	...	...	80	...	...	...	...	...	...
58	13,396.	Gunpowder, ...	...	...	...	...	5	...	...	100	...	...	...	...	...	...
59		Ginger, ...	...	...	...	...	5	...	...	25	...	...	...	...	...	...
60		Shoes, ...	...	...	...	...	N.139	...	...	69	8	..	...	...	...	...
61		Clothes, Cotton, ...	...	...	...	...	...	...	...	33,297	...	...	...	...	...	...
62		Opium, ...	...	...	..	...	...	...	...	...	...	...	1	10	...	62
63		Tobacco, Hill, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
64		Vessels, Iron, ...	...	...	..	...	100	...	...	1,000	...	...	...	...	...	...
65		Woollen Cloth, old,...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Cash, ...	...	...	...	4,306	...	...	..	49,511	...	...	...	...	...	2,750
		Total, Rs. ...	...	..	...	1,28,520	...	...	...	1,02,031	...	...	...	...	..	8,980

Rampore Fair for sale in November 1868.—(*Continued.*)

From Bussahir.						Total.												Rate per Maund.					
						1868.						1867.						1868.			1861.		
Quantity			Estimated Value.			Quantity.			Estimated Value.			Quantity.			Estimated Value.								
M.	S.	C.				M.	S.	C.	Rs.	A.	P.	M.	S.	C.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
...	...	...	...	...	...	(No.) 11	...	...	11	...	...	...	...	...	...	...	...	...	1 each		...	...	...
...	...	...	...	...	...	900	tol	as	900	...	...	...	...	...	...	...	...	1 per tola			...	...	...
5	8	...	65	...	...	39	8	...	490	...	...	67	8	8	840	...	...	12	8	...	12	8	...
...	...	...	...	...	...	N.2	...	...	...	8	...	...	...	...	...	...	...	...	4 each		...	...	...
...	...	...	...	...	...	5	...	...	16	...	...	...	...	...	...	...	...	3	3	2	...	...	...
21	25	..	43	...	...	24	25	...	49	...	...	24	16	...	61	...	...	2	...	...	2	8	...
...	...	...	...	...	...	20	..	...	100	...	...	...	...	...	...	...	...	5	...	...	...	...	...
...	...	...	...	...	...	1	...	...	10	...	...	...	...	...	...	...	...	10	...	...	..	...	...
...	...	...	...	...	...	...	1	4	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	21	...	7	...	...	...	..	...	...	...	...	3 seers per rup.			...	...	...
...	...	...	...	...	...	20	...	...	50	...	...	...	...	...	...	...	...	2	8	...	...	...	...
...	...	...	...	...	...	20	...	...	80	...	...	24	32	...	62	..	...	4	...	.	2	8	...
...	...	...	...	...	...	5	...	...	100	...	...	...	..	...	...	...	...	20	...	...	...	...	...
...	...	...	...	...	...	5	...	...	25	...	...	29	16	...	147	...	...	5	..	...	5	...	...
...	...	...	...	...	...	139	...	.	69	8	...	N 150	...	...	150	...	...	...	8 each		1 each		
...	...	...	...	...	...	...	...	..	33,297	...	...	...	...	...	12,366	...	...	...	...	...	...	...	...
...	16	...	200	...	...	1	26	...	825	...	...	5	16	...	1,620	...	...	500	...	...	300	...	...
3	..	...	6	...	...	3	..	...	6	...	...	...	...	...	...	...	..	2	...	...	...	...	...
...	...	...	...	...	...	100	...	...	1,000	...	...	68	4	..	885	...	...	10	...	...	13	...	...
...	...	...	...	...	...	...	...	...	...	...	...	N.224	...	...	448	...	...	...	...	...	2 each		
...	...	...	645	...	...	...	...	...	57,212	...	...	...	...	...	69,396	...	...	...	...	...	...	...	...
...	...	...	4,725	...	...	...	...	...	2,44,256	...	..	...	...	...	2,69,529	10	...	...	...	...	...	...	...

No. XXVI.—SERVICE IN SETTLEMENT DEPARTMENT QUALIFIES FOR PENSION.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton, Esquire, Secretary to Government Punjab, No. 249 *of* 31*st March* 1869.

A question has arisen as to whether the establishments in the Settlement Department are temporary or permanent, and if the former whether their service in the Settlement Department qualifies for pension.

2. The Accountant General noticed that the pergunnah establishment in Kangra varied from month to month, and suggested to Settlement Commissioner that they should be considered temporary, and drawn for in contingent bills under his countersignature.

3. The Settlement Commisioner agreed to this, but suggested that the names of the officials should be shown in the Account Registers in order that their services could be traced when applying for pension.

4. The Accountant General then enquired under what orders establishments so paid were considered eligible for pension.

5. The Settlement Commissioner is not aware of any special orders on the subject, but remarks that many of his subordinate officers are drafted from districts, and will revert to the district staff.

6. Mr. Prinsep, in referring the matter to this office (in No. 788 of 1st February) points out the hardship and inconvenience that will be entailed if service in the Settlement Department is not allowed to count towards pension.

7. The Accountant General was then addressed from this office, and his reply No. 128 of 16th instânt is enclosed, from which it will appear that there are some doubts on the subject.

8. I am to observe that the classes of officials eligible to pension are clearly defined in the general rules (Tulloh's Manual, page 210), and there is nothing to show that Settlement officials are excluded. The mere mode of drawing their pay, whether by contingent bill, or in abstract salary bill, should not affect the question. In practice, service in the Settlement Department has always been allowed to count towards pension in the cases that have passed through this office, provided, of course, the

service has been continuous and in eligible grades. It has been that the closing of a Settlement is equivalent to the abolition of and would not bar a claim to pension.

9. Settlement establishments are entertained on the authority of Government of India, and paid from the Imperial revenues ; and the Settlement of each particular district is so far a temporary taking, yet the Settlement Department is continuously employed, officials are usually transferred from one district to another, exigencies of the work may require. Many Settlement officials have, the system heretofore in force, belonged to the permanent staff of dis to which they have reverted when the Settlement was completed many others have taken a turn at Settlement work in the regular of their employment as public servants. If the system be changed Settlement establishments be constituted a separate department, dr none of their pay from the district budgets, it will be more than necessary to assure them that their service will count towards pe otherwise it will be impossible to obtain qualified men to enter it.

10. The Financial Commissioner would not have felt any dou the subject ; but as the Accountant General suggests that a refe should be made to Government, I am to request the favor of a di ruling to the effect that service in the Settlement Department in eli grades counts as service towards pension under the Uncovenanted Se Pension Rules.

11. Arrangements can then be made by the Accountant General Settlement Commissioner to have the names of officials so recorded in bills as to be readily traceable.

From T. H. Thornton, Esquire, Secretary to Government Punjab, to J. A. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 221 of 5th April 1869.

In reply to your letter No. 249 of the 31st March, I am desired state that it appears clear that service in the Settlement Departme eligible grades counts towards pension, and that there appears no ne sity for a reference to Supreme Government. The Accountant Gen will be so informed.

From T. H. Thornton Esquire, Secretary to Government Punjab, to E. H. Lushington Esquire, Secretary to Government of India, Financial Department, No. 328 *dated* 21*st May* 1869.

With reference to your letter No. 433, dated 15th May, calling for a report regarding a ruling by this Government, that service in the Settlement Department in eligible grades, shall count towards pension, I am desired to forward copy of letter No. 249, of the 31st March 1869, from the Secretary to the Financial Commissioner, and to observe that the Settlement Department is one of the most important under Government, and Settlement employés are usually selected men drafted from the ordinary district establishment. It would be unfair to the men and disastrous to future settlement operations, and consequently to the interests of the State, if service in this important department of the Administration in an eligible grade, were not to be considered as qualifying for pension.

From G. H. M. Batten Esquire, Under Secretary to Government of India, Financial Department, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 1363 *dated* 24*th June* 1869.

In reply to your letter No. 328 dated 21st May 1869, I am directed to state that service in the Settlement Department is allowed to count for pension if it is followed without a break by enrolment on a permanent establishment. In other cases the service is recognized for pension if it last for a long time, but all such cases are more or less special and therefore require the orders of the Government of India before the assignment of any grant.

From E. A. Prinsep Esquire, Settlement Commissioner Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 143 *dated* 13*th September* 1869.

With reference to his No. 4405 dated 19th July and previous correspondence, forwards for orders copy of letter No. 62 dated 4th September 1869, from Settlement Officer Peshawur, and states that in Settlement Commissioner's opinion, in the case quoted, the officer would not lose his right to pension during the period quoted, as his name has been brought on the books of the district, which was a permanent establishment though employed on Settlement work.

From Captain E. G. Hastings, Settlement Officer Peshawur, to E. A. Prinsep Esquire, Settlement Commissioner Punjab, No. 62 *dated 4th September* 1869.

With reference to letter No. 1363 dated 24th June 1869, from Under-Secretary to Government of India, Foreign Department, to Secretary to Government Punjab, in which it is laid down that service in the Settlement Department is allowed to count for pension, if it is followed without a break by enrolment on a permanent establishment. In other cases the service is recognized for pension if it last a long time, but all such cases are more or less *special* and therefore *require* the orders of the Government of India before the assignment of any grant. I would be obliged by your opinion in the following case of one official placed at my disposal from the Peshawur district, whose name is not kept on the permanent district establishment, *viz.* Meean Noor-oodeen, who has served in this district from 1st July 1854 up to the end of April 1869, in the grades of Moonserim, Sudder Moonserim, Sudder Kanoongoe and Deputy Superintendent of Deputy Commissioner's Office Peshawur, who, on the 1st May 1869, accepted the post of Superintendent of Settlement; will this official if he does not happen to be able on the completion of Settlement operations to get other employment, either in a district or in another Settlement, lose the right to count his settlement and former service towards pension, if so, it is just as well he should understand the risk he runs and some kind of promise be made him that if he does well during the present Settlement, his claim to further employment in the Settlement Department, suppose he wish it and fail to get into district

employment will be considered a right; if this cannot be done, he might be allowed the option to return to his former appointment in the district.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 960 *dated 9th December* 1869.

The orders of the Supreme Government on the subject of service in the Settlement Department as qualifying for pension, annexed to your No. 409 dated 1st July, were communicated to the Settlement Commissioner.

2. The Settlement Officer of Peshawur has now made a reference in the case of Meean Noor-oodeen, a Superintendent of Settlement lately appointed, most of whose previous service has been passed in the Settlement Department.

3. From a detailed statement of this man's service, which was originally prepared in connection with a separate file, but is equally applicable to the present purpose—it appears that he was a Moonserim of Settlement in July 1854. In 1861 he became Sudder Moonserim for a few months. From November 1861 to July 1867 he was Sudder Kanoongoe, and after that date to the time of his appointment as Superintendent of the present Settlement he was Revenue Serishtadar, now called Deputy Superintendent, of the Peshawur District Office.

4. Supposing the past service of this man to have been all continuous he has served 15 years, of which about 8 years have been in purely Settlement appointments. He may serve for many years more in the Settlement Department, and it is consequently very important for him, as well as for every other native officer similarly situated, to know whether by employment on Settlement duty, he is in any way jeopardising his future claim to a pension.

5. The order of the Supreme Government above quoted states that all cases of service in the Settlement Department are more or less special and require the sanction of Government of India; that Settlement service counts for pension if it is followed without a break by enrolment on a permanent establishment; and that in other cases the service is recognized for pension if it lasts for a long time.

6. Noor-oodeen's name is no longer on the list of the district establishments. He is a Superintendent of the Settlement Department, and draws his entire pay from that department. On the cessation of Settlement operations in Peshawur, his object will be either to secure employment in some other settlement that may be in progress or to obtain some appointment in the regular line in a district. In the event of his failing to secure the latter, and supposing him to have served long enough for a pension, he will have to fall back upon service chiefly in the Settlement Department in support of his claim. He will not, as regards service after 1869, have fulfilled the 1st condition laid down by the Government of India, inasmuch as he will not have been transferred to a permanent establishment. The question will then be whether his service in the Settlement has been sufficiently long to secure a pension.

7. The existing orders do not indicate how many years service will be held to be sufficiently long, and without definite information on this point the position of Settlement officials as regards claim for pension is very uncertain and unsatisfactory.

8. As it is very important both in the interests of the public service and of individuals that no doubts should rest on these points, I am directed to solicit the further instructions of Government regarding them.

The original correspondence in the case of Noor-oodeen is forwarded for reference.

From G. H. M. Batten Esquire, Under-Secretary to Government of India, Financial Department, to T. H. Thornton Esquire, Secretary to Government Punjab, No. 227 *dated* 11*th January* 1870.

In reply to your letter No. 804 dated 14th December 1869, I am directed to state that the general rule regarding the extent to which service in the Settlement Department will qualify for pension, was pointed out in my letter No. 1363 dated 24th June 1869. Its application in particular cases will in each case be considered on the merits when the officer concerned retires from the service. It is contrary to rule to pass prospective decisions on any claim to pension while the officer is still in employ.

FINANCIAL DEPARTMENT.

No. 74 dated 19th January 1870.

Copy to Secretary to Financial Commissioner Punjab, with reference to his No. 960 dated 9th ultimo.

By order,
(Signed) E. W. TROTTER,
Asst. Secretary to Government Punjab.

No. XXVII.—RESULT OF SOWINGS OF HINGUNGHAT COTTON SEED.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to Deputy Commissioners Amritsur, Lahore, and Rawulpindee, and Commissioners Amballa and Delhi, Nos. 4850 *to* 4854 *dated 29th September* 1868.

Supplies of Hingunghat cotton seed have been distributed to selected districts in the Punjab; and as the result of the experiment if successful will be of much value to the province, the Officiating Financial Commissioner desires to call the attention of the officers concerned to the points which should be attended to in the cultivation, and on which a report is required.

2. When the crop ripens, the cotton should be carefully picked, and kept separate from other kinds of cotton. It should be ginned carefully with the one handed belna in common use in the country, taking care that the seed is not crushed into the fibre during the ginning process. The seed should be kept carefully separate from other seed, and used in 1869 for further experiments.

3. The report on the experiment should be prepared after the last pickings are over—and may be in a tabular form as annexed. In the remarks full information should be given of the mode of cultivation adopted, whether ordinary field culture, or the more careful method adopted in gardens. The yield as compared with ordinary country cotton similarly situated should be stated, and the effect of moisture, whether natural or artificial, on the yield, and the foliage of the plant, should be noticed.

Report on sowings of Hingunghat Cotton Seed in the District of *Season* 1868.

District.	Tehseel.	Locality of plot sown.	Area of each plot.	Out-turn in cleaned cotton.	Weight of seed.	Nature of soil.	Mode of irrigation.	Height and style of plant.	Remarks.

From G. E. Macpherson Esquire, Assistant Commissioner Amritsur, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 1513 *dated 4th December* 1868.

In reply to No. 4850, dated 29th September 1868, from Secretary to Financial Commissioner, and Deputy Commissioner's instructions of the 19th October, I have the honor to forward a statement of the result of the Hingunghat cotton cultivation.

It will be seen that the produce has been *nil*, for the following reasons:—

1. That the seed arrived too late in the season.
2. That the seed sown did not germinate for want of rain.

The seed distributed in the Buttala pergunah has not been sown, as also some of that distributed in the Amritsur pergunnah. The balance of seed will be sown in April or May next.

Report on Sowings of Hingunghat Cotton Seed in the district of Amritsur, Season 1868.

District.	Tehseel.	Area of each plot.	Out-turn in cleaned cotton.	Weight of seed sown.	Nature of soil.	Mode of irrigation.	Height and style of plant.	REMARKS.
Amritsur, ...	Amritsur.	2 Kunals.	None.	4 Seers.	Manured land.	Well.		No out-turn, for the reasons explained in accompanying letter.
Do., ...	Do.	4 "	"	4 "		Canal.		
Do., ...	Do.	2 "	"	2 "		"		
Do., ...	Do.	4 "	"	4 "		"		
Do., ...	Do	4 "	"	4 "		Well.		
Do., ...	Do.	4 "	"	4 "		"		
Do., ...	Buttala.	Seed distributed but not sown.						

From J. W. Smyth, Esquire, Officiating Deputy Commissioner, Lahore, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 101 *dated* 14*th January* 1869.

I have the honor to submit herewith the statement called for in your letter No. 4851 dated 29th September last, shewing the results of the experimental sowing of Hingunghat cotton seed in this district.

2. Seed was distributed to Mr. Birnie Browne for sowing in Rukh Terah; to Nawab Nawazish Ali Khan, for sowing in Rukh Khumba; to Dewan Byj Nath, for sowing in Ajoodhiapoor; and to Nubbee Buksh of Baghwanpoor.

3. I also forwarded seed to the Deputy Commissioner of Montgomery, for sowing in the Probynabad farm, and 2½ maunds to the Deputy Commissioner of Amritsur for distribution in his district, as directed in your No. 1567, dated 30th March 1868. I forwarded copies of your letter No. 4851, dated 29th September 1868, to both those officers, who it is presumed will address you direct regarding the results of the experiment in their districts.

4. Owing to the late date on which the seed was received, and sown, and the dryness of the season, the results of the experiment in this district are not favorable.

If the seed could be distributed in March the experiment would have a better chance of success. The little seed which has been obtained from the sowings has been kept for further sowing this year.

Report on Sowing of Hingunghat Cotton Seed in the district of Lahore, Season 1868.

District.	Tehseel.	Locality of plot sown.	Area of each plot.	Out-turn in cleaned cotton.	Weight of seed.	Nature of soil.	Mode of irrigation.	Height and style of plant.	REMARKS.
Lahore.	L ahore.	Terah fuel plantation.	2 acres.	Nil.	Nil.	Very good.	For Irrition B. D. Canal.	Nil.	The seed was sown rather late in the season in July last, it germinated well and had only one watering from the canal in consequence of the dryness of the season, and failure of canal water, the whole was completely dried up; and no results obtained.
			A. R. P.						
Do.	Do.	Rukh Khumba.	0-3-13	$11\frac{1}{2}$ seers.	$28\frac{1}{2}$ seers.	"Maira Roha."	From Canal.	3 and 4 feet in height.	Ordinary field culture adopted; owing to the dryness of the season the out-turn was very deficient: the out-turn of ordinary country cotton was also deficient. The foliage is somewhat different from the foliage of country cotton, but in other respects the appearance is much the same as that of ordinary country cotton.
Do.	Do.	Ajdoohiapoor.	1-0-24	$1\frac{1}{4}$ do.	$3\frac{3}{4}$ do.	Maira.	Do.	$4\frac{1}{2}$ Do.	The seed was received too late, and the season was from drought very unfavorable. The out-turn was very deficient. The leaves are smaller than the leaves of ordinary country cotton. There were also fewer cotton pods or seeds on the plant. Ordinary field culture was adopted. The seed should be distributed in March for sowing.
				M. S. C.	M. S. C.				
Do.	Do.	Kotlee Ghansee.	1-0-0	1-15-0	4-5-0	Maira.	Do.	4 and 5 Do.	This plot was sown by Nubbee Buksh, but he has made no report on the points noted by Financial Commissioner.

From Major H. B. Urmston, Deputy Commissioner Rawulpindee, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 381, *dated* 17*th February* 1869.

With reference to his No. 4852, dated 29th September last, and subsequent reminder No. 572, dated 27th ultimo, forwards herewith report showing the result of the experimental sowings of Hingunghat cotton seed in this district during the season of 1868, in the tabular form prescribed by Financial Commissioner in his letter under reply.

Report of Sowings of Hingunghat Cotton Seed in the

District.	Tehseel.	Locality of plot sown.	Area of each plot.			Out-turn in cleaned cotton.	Weight of seed.	Nature of soil.
			Acres.	Roods.	Poles.			
		Mouzah Hussan Abdal	...	1	24	...	...	"Nahehree" or land irrigated by canals or hill streams.
		Mouzah Boorhan.	...	3	..	...	...	"Chahee."
		Mouzah Islamgurh.	..	2	20	...	...	"Chahee."
		Mouzah Bubrukkee.	...	...	30	...	...	"Baranee."
		Mouzah Vah.	1	...	...	2 seers and 2 chuttacks.	5 seers and 14 chttacks.	"Baranee."
		Mouzah Jungah.	1	...	27	4 seers.	8 seers.	"Chahee."

district of Rawulpindee, during the Season 1868.

Mode of irrigation.	Height and style of plant.	REMARKS.
By water flowing from a hill stream.	Height 5 feet, plant resembling the country cotton plant with broader leaves.	The ground was first ploughed and the cotton seed sown broad-cast, the same as they sow the country cotton. After the plants appeared above ground the soil around them was loosened and weeded with the hoe, the same as is used in gardening; each plant bore a larger number of pods than is usual with the plants of country cotton, but owing to extreme cold they became stunted and ultimately dropped off without producing any cotton whatever.
By water from wells.	Do.	Do. Do. Do.
Do.	Do.	Do. Do. Do.
Irrigation dependent on rain-fall.	Do.	Do. Do. Do.
Do.	Do.	The ground being first ploughed the cotton seed was sown broad-cast as is the practice in sowing country cotton. When the plants appeared above ground the soil around them was occasionally loosened and weeded with a hoe. The pods were less in number than is usually borne by the country cotton plants, but much larger in size and of superior quantity as regards the cotton produced therefrom.
Irrigated by well water.	Height of plant 4 feet resembling the plant of the country cotton, but having broader leaves.	Do. Do. Do. The yield as compared with country cotton similarly situated is much greater, inasmuch as one rood and 27 poles of chahee or irrigated land sown with Hingunghat seed produced 4 seers of cleaned cotton, while the yield of country cotton on a similar extent and description of soil is said to be not more than 3 seers. In like manner it will be seen that the effect of moisture on the yield is beneficial, for while 1 *rood* 27 *poles* of chahee or irrigated land produced 4 seers of cleaned cotton —the sowings on *one acre* of "barani" or irrigated land yielded only 2 seers and 2 chatacks. Of the seed obtained from the crop of 1868, 5 seers, 14 chatacks only are forthcoming, the remainder, 8 seers, having been carried away by the cultivator, who is a resident of the Peshawur district.

From Lieutenant Colonel W. McNeile, C. S. I., *Commissioner and Superintendent Delhi Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, No.* 201 *of* 6*th April* 1869.

Referring to your No. 4854, dated 29th September last, I beg to forward copies of the district officers' *reports on their experiments with the Hingunghat cotton seed. The season was most unfavorable, but it is to be hoped that better results may be obtained this year with the fresh supply of seed received in February last. It is I fear of little use to make further trial of the seed obtained from the crop now reported upon, but where any advantage is likely to be derived from doing so this will be done.

*Kurnal No. 15 dated 28th Jany. 1869.
Delhi No. 107 dated 25th March 1869.
Goorgaon No. 36 dated 16th February, but only received 3rd April 1869.

Copy of No. 15 *dated* 28*th January* 1869, *from Major J. Parsons, Deputy Commissioner Kurnal, to Lieutenant Colonel W. McNeile,* C. S. I., *Commissioner and Superintendent Delhi Division.*

With reference to his No. 372 dated 3rd October last, forwards statement of Hingunghat cotton, from which it appears that the cotton does not promise well in this locality.

Under ordinary circumstances it will be as easy of cultivation as the common cotton, and will yield as largely. I expect that a well grown crop will give a much larger quantity of clean cotton, and less weight of seed, than the common cotton. The plants are looking well, and will yield another crop in May. The season has been such as to render the cultivation of cotton all but impossible, and I should have abandoned the experiment had not the Deputy Commissioner desired it to be carried on in order that the seed might be preserved.

From Colonel H. Dwyer, Deputy Commissioner Goorgaon, to Lieutenant Colonel W. McNeile, C. S. I., *Commissioner and Superintendent Delhi Division, No.* 36 *of* 16*th February* 1869.

Begs to submit report on Hingunghat cotton sowings by Mr. Poulter, to whom the trial here was entrusted. Trial was not made elsewhere, as the seed was received too late for distribution. Begs instructions on disposal of cotton wool and seed. There is a quantity of the original seed still available. If trial is made again similar quantities of land in Pulwul, Ferozepoor and Jharsa might be selected for comparison.

Report on the Sowings of Hingunghat Cotton Seed in the District of Goorgaon, Season 1868.

District.	Tehseel.	Locality of plot.	Area of such plot.	Out-turn in cleaned cotton.	Weight of seed.	Nature of soil.	Mode of irrigation.	Height and style of plants.	REMARKS.
Goorgaon.	Jharsa.	Near the Sudder Station.	Acres 1-0-15.	18¾ seers.	65 seers.	Sandy loam.	Well.	Tall and Woody.	Result unfavorable; proportion of wool to seed 2-7 to 5-7, instead of the ordinary yield, or 32½ wool to 65 seers seed.

The land selected was treated in the ordinary manner, and two plots aggregating the extent given above were laid out for planting in drills 3 feet

apart, and two rows of the Indian Corn were planted between them. The cotton plant was eventually thinned to about 16 inches apart. The season was unfavorable in its rain-fall and the crop was only saved at a very early period by using well irrigation. Shortly after the formation of the pod or boll a small fly commenced depositing its larvæ in them. The attacked pods grew to a fair size, and burst showing empty shells and seed covered with yellow tinted cotton of short and weak staple. The wool of the prime bolls while more silky and larger in fibre, does not appear to have the strength of good country cotton. The great difference between the weight of wool and seed of the present trial and trials with other cottons made elsewhere and the local growth cannot be accounted for. I had the cotton ginned in my presence at 3 different times, *i. e.* of samples taken from three different pickings; the result was the same in all, the seeds are large and heavy, and it may be that, from the unfavorable nature of the season or the plants having taken to wooding, or from both causes combined, the fibre itself was not fully developed. The plant differs very much from the local growth of the district. No doubt a botanical description of it will be given from some other locality. I would not recommend the use of the seed of this year's produce for next year's sowings, unless a supply of other seed can be got for comparison of yield. The fields grown were purposely planted by the road side, but not a single zemindar had the curiosity to make enquiry, and many of the best when spoken to about the advantages in introducing new seed invariably had this reply—"no doubt, other countries have better cotton than we have, our soil does not like the plant, and we like bajra and bejhur."

From Colonel R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent, Amballa Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, No. 185 *dated* 9*th November* 1868.

In reply to No. 4853 dated 29th September 1868, forwards copy of Deputy Commissioner Amballa's report on the result of the sowings of Hingunghat cotton seed.

REPORT on Sowings of Hingunghat Cotton Seed in the District of Kurnal, Season 1868.

Tehseel.	Locality of plot sown.	Area of each plot.	Out-turn in cleaned cotton.	Weight of seed.	Nature of soil.	Mode of irrigation.	Height and style of plant.	REMARKS.
Paneeput.	Babyl, ...	10 Biswas.	6½ seers.	13½ seers.	Dakur chahee.	Well.	Average.	The seeds failed in 11 Biswas; the yield is comparatively (3 maunds) less than the ordinary country cotton per beegah.
	Bawanah Lakhoo, ...	1 Beegah 7 Biswas.	1 maund.	3 maunds.	Do.	Canal.	Do.	The yield is 2 maunds less than the ordinary country cotton per beegah.
	Noultha, ...	19 Biswas.	7½ seers.	21 seers.	Rouslee and Dakur nuhree.	Do.	Do.	Do. 4 maunds 10 seers do. do.
	Turuf Mukhdoom Zad Khan,	13 Biswas.	10 seers.	28 seers.	Rouslee chahee.	Well.	Do.	20 biswas of land were sown, of which the seed germinated in 13 only; the yield of this cotton is 2½ maunds less than the ordinary country cotton per beegah.
Kurnal.	Bulla, ...	1 Beegah 5 Biswas.	29 seers.	2 maunds 6 seers.	Rouslee nuhree.	Canal.	Do.	The yield is 2 maunds 28 seers less than the country cotton per beegah.
	Shekhpoora, ...	9 Biswas.	15 do.	1 do. 5 do.	Do.	Do.	Do.	Do. 1 maund 27 seers do.
	Gurhee Mooltan,	6 do.	2 seers 12 ch.	6 seers 12 ch.	Do. chahee.	Well.	Do.	Do. 3 maunds 8 seers do.
	Aleepoora, ...	9 do.	3 seers 2 ch.	9 seers 6 ch.	Do.	Do.	Do.	Do. 2 maunds 8 seers do.

From Major C. A. McMahon, Deputy Commissioner Delhi, to Lieutenant Colonel W. McNeile, C. S. I., *Commissioner and Superintendent Delhi Division, No.* 107 *of* 25*th March* 1869.

With reference to your No. 21 of 25th January 1869, and 372 of 3rd October last, I have the honor to forward a report on the results of the experimental cultivation of Hingunghat cotton by the Reverend Mr. Smith.

2. It is proposed to repeat the experiment this year. I would suggest that the 2½ maunds of acclimatised seed raised by Mr. Smith, be at once distributed to zemindars who are interested in cotton cultivation.

Report of the Hingunghat cotton cultivation in the Delhi District for the year 1868.

Twenty seers of seed was sown on twelve beegahs of land. One fourth of the seed was sown in rows about one yard apart, and well manured, another fourth was also sown in rows but not manured, and the remainder was sown in the usual country fashion. The ploughing was after the manner usually adopted in the country. The crop as far as the yield is concerned is a complete failure, but not by any means on account of the district being unfavorable to the cultivation of Hingunghat cotton, but may be safely attributed to the following causes :—

1st. It was not sown until July.

2nd. The season was a very unfavorable one for its cultivation, as there was no usual rain-fall, and all the cotton in the district was dried up, except where the land was irrigated, this had the benefit of the canal water, but in consequence of the dryness of the season, the demand in the district was so pressing that we experienced the greatest difficulty in obtaining it when it was required.

The plants that had the benefit of manure attained to the height of more than 6 feet, and were very strong, promising by the largeness of the pods to yield abundantly; where no manure was given the height was from 3 to 4 feet, and had the seed been sown about two months earlier and the season proved favorable there is little doubt but a good yield would have been the result of the experiment, as nearly all the plants were full of good large pods when the frost came and destroyed them.

The Hingunghat cotton is the best indigenous cotton I have seen in the country, and is eminently adapted for the European market.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to H. Rivett Carnac, Esquire, Cotton Commissioner, Central Provinces and the Berars, No. 6019 *of* 14*th December* 1868.

With reference to your letter No. 991 dated 18th March 1868, I am directed by the Financial Commissioner to report for your information that, owing to the very unfavourable season, the out-turn of cotton from the Hingunghat seed which you were good enough to supply for experimental sowings in the Punjab, has been very poor, in fact the sowings have very generally failed. The final reports from the districts to which the seed was supplied have not all been received, but the general result has certainly not been favorable.

2. The Financial Commissioner is anxious that the experiment should be resumed next year, and would feel much obliged if you can arrange to send him not less than 50 maunds to the care of the Deputy Commissioner of Delhi.

3. It is very desirable that the seed should reach the Punjab as early in the year as possible, both because the sowings of cotton in the Punjab are made early in the year and because some time is required to distribute the seed to the various districts in which the experiment is to be made.

4. The Financial Commissioner will therefore be much obliged if you will kindly arrange to despatch the consignment for the Punjab, by the 1st of March at latest.

From Messrs. Warwick and Co., to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, dated 26*th December* 1868.

At the request of Mr. H. Rivett Carnac, we have the honor to inform you of the despatch of 26 bags containing 50 maunds of Hingunghat cotton seed. The bags will be consigned from Jubbulpore to the care of the Station Master at Delhi, and we shall be obliged by your making the necessary arrangements to have than forwarded from Delhi immediately after their arrival.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab to Major C. A. McMahon, Deputy Commissioner Delhi, No. 248 *dated* 15*th January* 1869.

Messrs. Warwick and Co., of Hingunghat, have despatched 26 bags containing 50 maunds of Hingunghat cotton seed *via* Jubbulpore to the care of the Station Master Delhi. The seed is intended for fresh experiments in the Punjab, and I am to request that you will take charge of it on arrival, sending up a bill for any expenses incurred, and that you will distribute it is follows :—

3 bags to be kept at Delhi and distributed under orders of Commissioner in the Delhi Division.

Amballa	Division,	... ... bags	3
Jullundhur	do.	... ... ,,	3
Amritsur	do.	... ... ,,	4
Lahore	do.	... ... ,,	4
Rawulpindi	do.,	... ... ,,	4
Mooltan	do.,	... ... ,,	2
Derajat	do.,	... ... ,,	2
Lahore, for Secretary Agri-Horticultural Society,		,,	1
		Total, ...	26

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to Commissioners Delhi, Amballa, Jullundhur, Amritsur, Lahore, Rawulpindee, Mooltan, Derajat, and Secretary Agri-Horticultural Society Lahore,

Nos. 249 *to* 257 *dated* 15*th January* 1869.

Forwards copy of No. 248 of 15th January 1869 to Deputy Commissioner Delhi, with a request that they will distribute the seed on arrival to Deputy Commissioners, and enjoin on them to see that it is sown with care, and the results supervised and reported in the manner prescribed in the annexed general letter No. 4850 of 29th September last.

2. Any experiment with the seed collected from last season's crop should be kept distinct from the present experiment. Owing to unfavorable weather the last trial was not very successful, but it is hoped better results may be attained this year.

From Captain J. S. Tighe, Deputy Commissioner, Amballa, to Colonel R. G. Taylor, C. B., C. S. I., Commissioner Amballa Division, No. 272 *of* 29*th October* 1868.

In reply to Circular No. 141 dated 6th instant, I have the honor to report that the Hingunghat cotton seed was distributed through the district and sown in about 25 plots.

2. Owing however to the excessive drought, the plants on reaching about one and half feet in height were withered and stunted, and no fair judgment can be formed of its value as a new staple. In one place however, where irrigation was available, half a beegah is pretty fair: it has yielded about 8 seers clean cotton the first picking—and will bear further pickings; this amount however is too insignificant to allow a proper opinion to be formed. If seed can be given for next year I shall be glad to try the experiment again.

From Charles P. Elliott, Esquire, Deputy Commissioner Loodhiana, to Major General R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent Amballa Division, No. 124 *of* 31*st March* 1869.

In reply to his Circular docket No. 141 dated 6th October 1868, submits a report in the form received therewith regarding the sowings of Hingunghat cotton seed in this district in the season of 1868.

Report on Sowings of Hingunghat Cotton Seed in the District of Loodhiana, Season 1868.

District.	Tehseel.	Locality of plot sowed.	Area of each plot.	Out-turn in cleaned cotton.	Weight of seed.	Nature of soil.	Mode of irrigation.	Height and style of plant.	REMARKS.
LOODHIANA.	Loodhiana, ...	Loodhiana Govt. Garden.	1 beegah.	...	5 seers.	Rouslee chahee.	Irrigated from well.	2 feet.	The mode of cultivation adopted in this district was the ordinary field culture. The yield has been nothing except in Jugraon, where the out-turn is comparatively small and of very inferior quality, and this is owing to the scarcity of seasonable rains.
	Ditto, ...	Juwaddee.	8 biswas.	...	2 seers.	Rouslee baranee.	...	2 feet.	
	Ditto, ...	Dad.	1 beegah and 1 biswa.	...	5 seers.	...	...	2 feet.	
	Ditto, ...	Soonet.	6 biswas.	...	1½ seers.	Dakia baranee.	...	2 feet.	
	Ditto, ...	Hybowal.	1 beegah and 16 biswas.	...	9 seers.	Rouslee baranee.	...	2 feet.	
	Jugraon, ...	Jugraon.	13 biswas.	1¼ seers.	4 seers.	Rouslee chahee.	From well.	3 feet.	
	Sumralla, ...	Poawit.	17 biswas.	...	5 seers.	Rouslee baranee.	...	1 foot.	

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, to Colonel R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent, Amballa Division, No. 6018 *of* 14*th December* 1868.

With reference to your letter No. 185 dated 9th ultimo, forwarding copy of a report of the Deputy Commissioner of Amballa on the result of the sowings of Hingunghat cotton in the Amballa Division, I am directed to request that you will desire the Deputy Commissioner of Amballa to preserve the seed of the plants which have produced cotton for future sowings. It is to be regretted that the season has been so unfavourable for the experiment, but a further supply of Hingunghat cotton seed will be procured for next year.

No. XXVIII.—RICE HUSKING MACHINES.

From Major H. W. Gulliver, Officiating Under Secretary to Government Punjab, Public Works Department, Irrigation Branch, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab,

No. 1252 *E. I., dated* 12*th October* 1868.

I am directed to forward the correspondence noted in the margin on the subject of introducing rice husking machines in the province, and to request that enquiries may be made of the district officers with the view of obtaining information called for in para. 3 of letter No. 160 E. I.

Government of India's No. 937 E., dated 26th June 1868, with enclosures.
Government of India's No. 160 E. I., dated 30th September 1868.

2. Your own opinion as to the advisability of introducing these machines should be forwarded with the district reports.

Government of India's, Public Works Department, No. 947 *E., dated* 26*th June* 1868.

Copy of the following correspondence forwarded to the Government of the Punjab, in the Public Works Department, Irrigation Branch, for information, with the request that the Government of India may be informed whether any mills of the description furnished would prove useful in the Punjab, and if so what number would be required.

From the Government of India, Public Works Department, to Messrs Lepage, Nephew and Co., No. 852 *E., dated* 4*th June* 1868.

The Government of India will deem it a favor if Messr's Lepage Nephew and Co. would furnish it with full particulars of rice husking mills of the best pattern, detailing their cost, the horse power necessary to drive them, the quantity of grain cleaned in a given time, and the space needed for the machinery exclusive of the driving power.

2. The Government of India also wishes to be informed whether Messrs. Lepage Nephew and Co. have had any experience in husking up

country rice, and whether they found it in any respect different in its grain and husk from the rice grown on the coast.

From Messrs. Lepage Nephew and Co., to A. B. Sampson, Esquire, Assistant Secretary to Government of India, Public Works Department, dated 11th June 1868.

We beg to acknowledge receipt of your letter dated Simla, 4th June 1868, and in reply to state, that we are at the present time in a position to supply a rice mill, with steam power complete, as per enclosed specification.

We would draw particular attention to this machinery, which has been made with the greatest care under special superintendence, and combines all the latest improvements, it is capable of husking and cleaning ready for consumption, from 2 to 3 tons of rice per day of 10 hours, passing twice through the stones, or 5 to 6 tons per day at one operation.

A 4-horse power portable engine drives the machinery as detailed in the specification.

We certainly have not had any experience in husking up-country rice, but we do not think it can make any possible difference as regards the operation of husking, as the mill can be easily adjusted to operate on any quantity of rice.

Should the Government of India require a larger mill than the one here specified we shall be glad to estimate for one of any size, capable of husking and cleaning any quantity of rice that may be required.

Should it be the intention of the Government of India to purchase the machinery, we shall thank you to let us have the order as soon as possible; it being the only rice mill of any size in Calcutta there are many enquiries for it.

The price of the mill complete with steam engine packed ready for delivery is rupees six thousand eight hundred (Rs. 6,800) only.

Government of India's, Public Works Department, No. 160 *E. I., dated 30th September* 1868.

I am directed to acknowledge receipt of your letter No. 791 I., dated 10th August 1868, reporting that rice husking mills would not prove

remunerative in the Punjab; and in reply to state, the Government of India is not satisfied to allow the proposition which is indirectly affirmed by this statement to pass without notice.

2. The neglect to utilize the great water power which is furnished by all the Irrigation Canals of Upper India, is a serious evil, which has more than once been commented on by the Governor-General in Council, and which it is again necessary to bring prominently to notice. It is impossible to assent to the general assertion that the husking of rice where it is largely consumed or the grinding of corn in large quantities cannot be done more economically by machinery than by human power. That there may be, and in fact are, difficulties in introducing a novelty in India, is beyond dispute; but this makes it the more incumbent on the heads of the engineering departments to ascertain where the causes of failure have hitherto been and how they may be avoided in the future.

3. I am therefore to request that this matter may again have the serious attention of the Chief Engineer, and that he may cause a more exact investigation to be made into the facts which are important in relation to it. With this view, enquiry should be made as to what are the districts in which rice is chiefly grown, the quantity produced, where it goes to market, how it is now husked, and what are the precise reasons which lead to the conclusion that it will not pay to husk it by machinery.

4. A like enquiry may usefully be made as to the supply of flour and oil to the larger towns, having in view the possibility of performing the needful mechanical operations in their preparation by the water power of the canals.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, to Commissioners and Superintendents Delhi, Amballa, Jullundhur, Amritsur, Lahore, Rawul Pindee and Peshawur Divisions, Nos. 5527 *to* 5533, *dated* 11*th November* 1868.

Enquiries have been made by the Government of India as to the system of rice husking in the Punjab, and what prospect there is of rice husking mills with steam power being appreciated here. I am directed to annex an extract from the Government of India letter No. 160 of 30th September, to the Irrigation Department, Punjab, and with reference thereto to request

that you will call upon the Deputy Commissioner of * * * to report on the subject.

2. To ascertain the yield it will be sufficient to obtain the opinion of competent persons as to the rate of yield, and to apply this rate to the area shown by the annual crop statement to be under rice cultivation.

3. The cost of husking the rice under the present system should be given in such a form that the rate per Government maund may be readily ascertained. If payment is made in kind the value of such payment should be given per maund.

4. Care should be taken not to give statistics in which native weights or measures are used, without at the same time giving information which will enable the weight in Government maunds or seers to be ascertained.

5. In stating quantities of rice it should be stated whether husked or unhusked rice is meant.

From Lieutenant Colonel W. McNeile, C. S. I., Officiating Commissioner and Superintendent Delhi Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 255, dated 16th December 1868.

The district reports in reply to your No. 5527, dated 11th ultimo, show that the whole out-turn of rice in this Division does not exceed 5,00,000 maunds. The cost of husking varies from 3 to 5 anas per maund, and if represented in money, may be placed at rupees 1,20,000; but as a rule, rice is not husked by paid labor, but by the women of the family consuming it, and the sale is therefore of unhusked rice generally speaking. Husking before sale only takes place to any considerable extent when the rice is to be exported. The Deputy Commissioner Delhi thinks that perhaps as much as a lakh of maunds is exported from the northern part of his district towards Rohtuck and Bhewani. The estimate appears high, but if correct does not furnish very hopeful data for the establishment of steam husking mills, as the production is spread over a considerable area, and probably not half of it would be brought to the mill, whatever site were selected. The surplus production of the Kurnal district finds its way to market in a different direction, *viz.* to Amballa, Loodianah, &c., while from Goorgaon and the southern pergunnas of Delhi there is no export at all.

From P. S. Melvill, Esquire, Commissioner and Superintendent, Rawul Pindee Division, to W. Coldstream, Esquire, Officiating Secretary to Financial Commissioner, Punjab, No. 292, *dated* 23*rd December* 1868.

I have the honor to acknowledge the receipt of your letter No. 5532, dated 11th ultimo, and to forward the enclosed statement furnishing the information called for.

2. Major H. B. Urmston, Deputy Commissioner Rawul Pindee, reports that there is no prospect of rice husking mills with steam power being appreciated in his district. This report is made on the result of enquiries made by the Tehseeldars of the district.

3. Major J. B. Smyly, Deputy Commissioner Goojrat, states, that owing to the cultivators having such a vague conception of the proposition, and the nature of steam husking mills, it is not possible to obtain an accurate idea of their wishes on the subject, and that the rice growers would be glad to learn the cost per maund at which the steam mills would husk rice for them, to allow of their comparing expenses.

4. At present rice is husked by the cultivators themselves, or by the members of their families, by the crude process of braying the rice in a stone or wooden vessel with a pestle. This process entails a large amount of labor and loss of time, but the cultivator has no employment for either, except that required for his agricultural affairs, and the labor and time spent by him in husking his own rice are not considered of much moment.

5. The use of steam mills would therefore cause a certain amount of expenditure which is not now incurred.

6. It is consequently not likely that the people in the above-mentioned districts will readily use them, and the only prospect of their doing so is in the cost of husking being very moderate, or at all events not more than that now prevailing in the different localities where rice is produced.

Statement showing the area under rice cultivation, the quantity produced, how husked, and the cost of husking, and the markets to which husked rice is exported, in the districts of Rawul Pindee and Goojrat of the Rawul Pindee Division.

DISTRICT.	Area under rice cultivation in acres.	Quantity of rice produced unhusked, in maunds.	How husked under present system.	Cost of husking Government maund of 40 seers.	Markets to which husked rice is exported.	REMARKS.
Rawulpindi, ...	1,118	9,736	By the process of pounding. A large stone bowl is placed on the ground, the unhusked rice is filled into it, and pounded until the rice is separated from the husk.	The cultivators husk their own rice, and do not employ hired labour.	The quantity produced is barely sufficient for consumption in the district.	In this district cultivators husk the rice themselves. But if hired labor was employed it is estimated that the cost of husking a Government maund of 40 seers would on an *average* be about 6½ annas per maund.
Goojrat, ...	6,088	73,955	By hand mills and pestle and mortar.	2½ annas or 5 seers in the maund in kind.	A small quantity exported to Sukkur, the rest is consumed in the district.	Generally payment for husking is made in money.

From Major W. G. Davies, Deputy Commissioner Goordaspore, to P. H. Egerton Esquire, Commissioner and Superintendent Amritsur Division, No. 2 dated 6th January 1869.

I have the honor to furnish the information called for in Financial Commissioner's No. 5530 of the 11th November last, with its enclosure, received with your Circular No. 116 of 14th idem.

2. Rice husking is done in two ways: the unhusked grain is either beaten in a large earthen mortar with a wooden pestle, or under hammers worked by treddles in the way materials for paper manufacture are macerated. The zemindars clean the rice for their own consumption at *home*, they and their women. Grain dealers who work on a larger scale of course employ hired labor. Remuneration in such cases is given in kind, at the rate usually of 3 seers of clean rice per maund of uncleaned rice. The result of husking one maund of rice is 30 seers of clean rice (of which 3 seers go to the cleaner), and the rest husks; so that at an average of 12 seers per rupee the cost of husking comes to four (4) annas per maund of unhusked rice ("dhân").

3. The total area under rice cultivation in this district just now is 69,220 acres, and assuming 10 maunds per acre as the produce all round of unhusked rice (dhân), the result in round numbers would be seven lacs (7,00,000) of maunds as the total produce of this crop in this district. It is probably more, and certainly it is not less than this amount.

4. As regards the question of whether it would pay to husk rice by machinery, it is sufficiently obvious that it would only pay *dealers* to resort to this mode of cleaning rice. It would never be worth the while of petty proprietors of five or six acres (the average size of the holdings in this district), of which two or three acres at most would be under the crop at one time, to carry the produce several miles to the place where the machine is situated, pay the cost of husking, however small this may be, and take it back again, when they can dispose of all that they do not require for their own consumption in the crude state, and clean the rest themselves at home.

But as a large proportion of the produce is disposed of to professional grain dealers, and these have to clean it by hired labor at the average rate of four (4) annas a maund, it is reasonable to infer that if a rice husking machine were put up at large centres of population and trade, and the charge for husking were fixed at rates considerably below those at which the

same work was done by manual labor, and by the rude native processes in vogue, in time the people would readily and largely resort to the European rice mills, provided further that the *work turned out was equally good by the latter process;* the people, I find, have an idea that the European mills would destroy the grain, and seem to attach great importance to its coming out of the mill whole and uninjured.

From T. D. Forsyth, Esquire, Commissioner and Superintendent, Jullundur Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 14—89 *dated 9th January* 1869.

No. 5529 dated 11th November, 1868, *re* rice husking machines.

I have the honor to reply as follows to your letter marginally noted.

2. *Jullundhur.* In this district rice is not extensively grown and the quantity produced is consumed locally. The method of husking rice at present is by a pestle in a wooden trough; sometimes light stone mills are used. The present area under rice cultivation is 8,043 acres. The yield per acre 10 maunds, English weight, husk 4 maunds, grain 6 maunds. The cost of husking per acre is 2-8-0 or 4 annas per maund. Rice is grown in patches of low land; not all in one locality; it is husked by the cultivators themselves and not by hired labor. Fuel in this district is dear, and it would not be remunerative to husk rice by steam machinery.

3. *Hoshiarpore.*—Very little rice is grown in this district, and that only for local consumption.

4. *Kangra.* The Deputy Commissioner furnishes a translation of the reports of Tehseeldars of his district on this subject, copy of which I append hereto for perusal. Major Paske is of opinion that rice husking machines with steam power would be highly advantageous.

5. I do not think there is any prospect of a steam rice husking machine being used in the Kangra valley. Water power is plentiful, and can be had of great force, so that steam would be unnecessary. An improved kind of water mill might be appreciated, and could be set up in many parts of the valley, whereas a steam mill could only be located in one or two places, where fuel is abundant. Hence it would not be appreciated by the people.

Information given by Tehseeldars in reports called for on receipt on Commissioner's No. 99 of the 23rd ultimo.

Extent of land under rice cultivation :—

Kullu, ...	Acres	5,253
Nurpore, ...	"	11,694
Hamirpore, ...	"	5,000
Palach, ...	"	552
Dera, ...	"	38,750
Kangra and Palumpore, ...	"	53,002
Total, ...	"	115,251

Average out-turn per acre :—

Kullu, ...	15	maunds.	Unhusked Rice.
Nurpore, ...	10	"	
Hamirpore, ...	6	"	
Palach,*	30	"	
Dera, ...	10	"	
Kangra and Palumpore, ...	18	"	

Average out-turn for the whole extent of land under rice cultivation, *i. e.* 1,15,251 acres. 14·8333 maunds per acre.

The rice is disposed of as follows : Kullu exports annually about Rupees 3,000 worth to Ladak &c., the remainder being consumed in the sub-division.

Palach exports annually about 2000 maunds to Rampore, the remainder being consumed in the sub-division.

The other sub-divisions export large quantities to Jullundhur, Amritsur, Lahore, Mooltan &c.

The Tehseeldars give no information on the subject, but it is I believe all husked rice (chawul) which is exported.

Method of husking the rice. In Kullu it is sometimes done in water mills (sharât) at a cost of 1¼ seers 5 pies per maund of unhusked rice.

* This is evidently a mistake if the average out-turn per acre does not exceed 18 maunds in Kangra the richest rice growing tracts in the district the out-turn will be less than 18 maunds in Plach where the rice growing lands are poorer. In the return submitted to the Commissioner the out-turn in Plach should be entered at 15 maunds per acre.

These mills do not husk the rice very effectually, and the plan of pounding the rice in a mortar is frequently resorted to after it has passed through the mills. There is no rate fixed for husking the rice with pestle and mortar although it is the method most generally used, because it is always done at home. In all the other Tehseels, the husking is done with pestle and mortar at the rates mentioned below :—

				s.	a.			
Nurpore,	4 seers	unhusked	=	1	6	per	maund	unhusked.
Hamirpore,	4 ,,	,,	=	1	6	,,	,,	,,
Palach,	1 ,,	husked	=	1		,,	,,	,,
Dera,	$3\frac{1}{4}$,,	unhusked	=	1	3	,,	,,	,,
Kangra,	$2\frac{1}{2}$,,	,,	=	2		,,	,,	,,

In the Hamirpore sub-division the rice is sometimes husked with a pestle and mortar worked by the feet like the machines used in jail paper manufactories. The Tehseeldars of Nurpore and Kangra only express an opinion as to the advisability or otherwise of introducing steam machines into the district. The former expresses a decided opinion in their favor, without giving any reasons. The latter is as decided the other way, because—1st, the rice is at present husked by the women in the house, to whom no hire is paid; 2, because the people would object to take the rice any distance to the machines.

Total out-turn of each Tehseel :—

Kullu, ...	78,795	maunds.
Nurpore, ...	116,940	,,
Hamirpore, ...	30,000	,,
Palach, ...	16,560	,,
Dera, ...	3,87,500	,,
Kangra and Palumpore, ..	9,72,036	,,
Total for the District ..	16,01,831	maunds unhusked rice.

From Major F. R. Pollock, C. S. I., *Commissioner and Superintendent Peshawur Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 9, dated 30th January* 1869.

In reply to his No. 5533 dated 11th November last, begs to submit the accompanying statement in original from Deputy Commissioner Peshawur, shewing the information called for in regard to rice husking by machinery in the district.

No.	Name of Tehsil.	Area under rice cultivation	Annual yield of rice unhusked.	Rate of rice yield per acre in maunds unhusked.	Cost of husking rice per maund.	Mode of husking.	REMARKS.
		Acres.	Mds.	Md. Sr. C.	Rs. As. Ps.		
1	Doaba, ...	7,610	50,765	6 26 0	0 4 0	The rice is dried for 3 or 4 days in the sun and is then husked by the heavy wooden lever worked by the foot, the rice being in a strong wooden receptacle in the ground into which the wooden hammer falls.	Rice is exported in small quantities. The trade statistics of 1867-68 give— Exports, ... 6,400 Maunds imports, ... 2,300 It goes to the Punjab via Attock.
2	Hazoor (City),	312½	7,032	15 20 0	0 6 0		
3	Hushtnuggur,	1,540	6,527	4 6 0	0 3 0	There can be little doubt that in this district with the great water power available, it would pay as well to husk rice by aid of a water wheel as it does to work all the soorkee mills upon exactly the same principle and now used by Public Works Department. I understand too that water power is used in Jullalabad and Swat for the same purpose.	
4	Daoodzye,	2,106	21,060	8 4 0	0 4 3		
5	Khalsa Khuttuck,	*Nil.*	*Nil.*	*Nil.*	*Nil.*		
6	Eusufzye,	*Nil.*	*Nil.*	*Nil.*	*Nil.*		
Total, ...		11,568½	85,384	34 16 0	0 4 4		

From Major General R. G. Taylor, C. B., C. S. I., *Commissioner and Superintendent Amballa Division, to J. A. Miller, Esquire, Secretary to Financial Commissioner, Punjab, No.* 69, *dated 30th April* 1869.

* From Deputy Commr Amballa, No. 65, dated 18th March 1869.
Ditto Loodiana, No. 138 dated 8th April 1869.
Ditto Simla, No. 133 dated 1st March 1869.

In continuation of this office No. 42 dated 25th February last, forwards copies of replies of the Deputy Commissioners of this Division, as noted in the margin,* on the subject of rice husking machines.

From Captain J. S. Tighe, Deputy Commissioner Amballa, to Major General R. G. Taylor, C. B., C. S. I., *Commissioner Amballa Division, No.* 65 *dated* 18*th March* 1869.

In reply to Circular No. 35 dated 25th ultimo, states that about 6,00,000 maunds of rice (dhân) at 40 seers the maund, are produced in this district; the production of clean rice (chawul) is 3-5ths and 2-5ths of husk and refuse; the average cost of husking is 2-2 annas a maund (of uncleaned rice *i. e.* dhân) sometimes paid in kind sometimes in cash; taking the average cost of various rates, the cost may be fairly set down at 2½ annas the maund.

2. Water power from the Guggur would be available in the principal rice growing part of the district, *viz.* in Munnee Majra, and this would be preferable to steam.

3. Improvement in grinding wheat by water power as well as husking rice would be of great benefit. A system of improved turbines would be invaluable.

4. The rice of Amballa is principally consumed in the district; a small portion is exported to Putteeala and across the Sutlej to the Punjab; it is always exported in the clean state (chawul.)

5. There appears no reason for believing machinery would not pay, but it should be moved by water power when possible, not steam.

From C. P. Elliott, Esquire, Deputy Commissioner Loodianah, to Major General R. Taylor, C. B., C. S. I., *Commissioner Amballa Division, No.* 138 *dated 8th April* 1869.

In reply to your Circular 35 of 25th February last, I have the honor to state that the area under rice cultivation in this district is small, and the persons who have been asked have given such different accounts regarding

the yield per beega, that I do not feel very certain that the information I have obtained is correct, but as the Financial Commissioner has issued a reminder, I do not like to delay any longer submitting my report.

1. Area under rice cultivation 2,233 beegas.

2. Quantity produced unhusked rice, 13,398 maunds.

3. Average yield per acre, unhusked rice 6 maunds.

4. Cost of husking rice per maund, 6 annas.

5. The rice is husked by pounding it in a wooden mortar.

6. Rice is not exported from this district. As so little rice is grown in this district it certainly would not pay to establish a steam mill.

From D. C. Macnabb, Esquire, Deputy Commissioner Simla, to Colonel R. G. Taylor, C. B., C. S. I., *Commissioner Amballa Division, No.* 133 *dated* 1*st March* 1869.

In reply to Circular No. 35 dated 25th ultimo, states that in these hills there is no field for the employment of husking machines. The rice cultivation lies in small detached valleys, and the families of the cultivators husk each the produce of their own fields.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner, Punjab, to Major H. W. Gulliver, Under Secretary to Government, Irrigation Department, No. 2042, *dated 9th April* 1869.

With reference to your letter No. 1252 E. I. of 12th October 1868, I am directed to forward a statement giving information regarding the cultivation and husking of rice in districts where it is chiefly grown.

The majority of officers consulted think that steam mills for husking rice would not be appreciated by the people—because, 1st, the rice needed for their own consumption is husked in their own homes, by simple processes. These processes doubtless cause loss of time and labor, but the inconvenience of this is not felt by an agricultural people; 2nd, the area of rice cultivation is so scattered that no one site would be equally accessible to all growers—and the cost of carrying the rice unhusked to a distance to be husked would be greater than the advantage obtained; 3rd, what is not needed for consumption can be sold to traders for export unhusked, and if

any machines are needed it would be by the dealers in central places rather than by the growers.

2. The Officiating Financial Commissioner is of opinion that an experimental husking machine, to be worked by water power, should be established somewhere in the neighbourhood of Puthankote. Kangra and Goordaspoor are the chief rice growing districts in the Punjab. The new road from the Palum Valley to Noorpoor will facilitate the transport of grain, and it may be expected that the cheaper rate at which rice in the husk will be sold as compared with rice free from husk will enable exporters to bear the additional cost of carriage to Puthankote.

3. Mr. Melvill further observes that the people of districts where running water is available usually get their corn ground in water mills, and there would seem to be no reason why they should not be expected to look favorably on mills for husking rice, supposing the work done by them to be effectual. There is a large export trade in rice from Kangra *via* Noorpoor and the staple crop in the neighbourhood of Puthankote is rice. He thinks that steam mills would not answer.

Statement of particulars of Rice Husking in the Punjab.

DISTRICT.	Area under rice cultivation.	Average produce of unhusked, per acre.	Total produce of unhusked rice.	Cost of husking per Government maund of unhusked rice.			Yield of husked rice from one maund of unhusked rice.			Time when the rice goes to market.	How the rice is now husked.
				Rs.	A.	P.	Md.	S.	C.		
Delhi, Goorgaon, Kurnal, ...	...	...	5,00,000	...	3 to 5	...	...	...	...	...	No particulars given.
Jullundhur, ...	8,043	10	80,430	...	4	...	...	24	...	...	Pestle and wooden trough, and light stone mills.
Kangra, ...	1,15,251	148	16,01,831	...	1	3	...	.	...	...	Pestle and mortar, and sometimes water mills.
Amritsur, ...	42,500	13	5,52,500	...	2	6	...	27	...	...	Not stated.
Goordaspoor, ...	69,220	10	6,92,200	...	4	...	...	30	...	...	Pestle and mortar, or under hammers worked by treddles.
Sealkote, ...	...	...	...	...	3	2½	...	27	...	...	"Jhunda" tilt hammer.
Lahore, ...	24,445	13	3,17,785	...	2	9½	...	26	...	November to February.	Pestle and mortar and tilt hammer "okhlee" and moosul.
Rawul Pindee, ...	1,118	8·7	9,736	...	6	6	...	...	...	...	Pestle and mortar.
Goojrat, ...	6,088	12·1	73,955	...	2	6	...	...	...	...	Hand mills and pestle and mortar.
Peshawur, ...	11,568	7·3	85,384	...	4	4	...	...	...	...	Tilt hammer.

No. XXIX.—THE DHARWAI SYSTEM OF VILLAGE ACCOUNTS—DERA GHAZEE KHAN DISTRICT.

From D. F. McLeod, Esquire, C. B., Financial Commissioner Punjab, to Major J. R. Becher, Commissioner and Superintendent Derajat Division, No. 2730, dated 10th July 1863.

I have the honor to state that on the return of Captain Minchin, Deputy Commissioner, from leave, I shall be glad if he will submit a specimen of the form in which he would propose that the village accounts shall be kept by the Dharwais or other Village Accountants, and that in which abstracts of these shall be submitted by the superior Patwaris.

2. If on the completion of the demarcation of boundaries, these latter could be relieved from the detail of keeping village accounts in full, leisure would be afforded them for preparing the hudbast maps, and also hereafter shajrahs, which there is no present prospect of the Survey establishments being prepared to undertake, as Captain Minchin in his Revenue Report suggests.

From Captain C. Minchin, Officiating Deputy Commissioner Dera Ghazi Khan, to Major J. R. Becher, Commissioner and Superintendent Derajat Division, No. 516, dated 11th November 1863.

With reference to your No. 359, dated 14th October, and 247 dated 23rd July last, forwarding copy of No. 2730, dated 8th July, from Financial Commissioner, calling for a specimen of the form in which I would propose that the village accounts should be kept by the Village Accountant, I have the honor to submit the following report on the subject, which I trust will meet with the approval of Government, and to solicit that I may be permitted to introduce the system at an early date.

2. There are at present 103 Patwaris employed in the district,

Sunghur, 15 Patwaris giving 4 villages to each Patwari.
Dera Ghazi Khan, 48 Patwaris, or 3 villages to each.
Dajul, 26 Patwaris, or 3 villages to each.
Mithunkote, 14 Patwaris or 4 villages to each.
Total 103 Patwaris, average 3 villages to each Patwari.

according to Tahseels, as entered in the marg The work and remuneration fall on them v unevenly, on account of the peculiarities conne with the tenures in the district. The villages al the river banks are more thinly tenanted, the is less, there are fewer proprietors, the sub-divi of shares is less, and the juma assessed on the vill being higher, the Patwari in charge has much l work to do, and more pay to get for it. The P waris of the villages along the frontier, which are irrigated by the l streams, are over-burdened at present, and most scantily remunerated. T extent of country included in the village area is enormous, and this is su divided into numerous "bunds," the proprietorship of which is divid amongst a whole family, so that the number of names to be entered in t khewuts and juma-bundi is nearly 3 times as many as in the other villag while the juma assessed on the estate being nominal, the Patwaris' fees very inadequate.

3. The time of the Patwaris is now almost wholly taken up in p paring their annual papers, for if employed on other duties substitutes m be found to have their papers ready. The great delay occurs in the p paration of the juma-bundi, the details of which are nearly all fictitious untrustworthy, so that really these Patwaris are employed for years adding up imaginary sums, for which they are paid by the zemindars, b per-centage on the juma averaging from 3 to 5 per cent.

4. The Financial Commissioner, in his memo. on the employment Dharwais, suggested that 2 per cent on the juma should be allotted for payment of the Patwaris it is proposed to retain, and the Dharwais sho be paid by the villagers, by a share of the produce. The present juma of t district is 3,24,000 Rs., 2 per cent on which would allow 6,480 Rs. p annum for the Patwaris' fees and contingencies. This I would recomm should be distributed as follows :—

To be distributed as follows:

Sunghur, ...	8
Dera Ghazi Khan, ...	20
Dajul, ...	10
Mithunkote, ...	8
Total, ...	46

10	Patwaris	@ 150 Rs.	per annum	Rs.	1,500
20	Do.,	@ 130 ,,	per annum	,,	2,600
16	Do.,	@ 120 ,,	per annum	,,	1,900
				Total, Rs.	6,020

The Rajunpore Jageer is included in the Mithunkote boundary, which will give one or two extra Patwaris to the Tahseel.

And allow for contingencies, including purchase of plane tables, compasses, payment of teachers for surveying &c., ... Rs. 460

Grand Total, Rs. 6,480

Next year revision of the Settlement may take place, when the juma of the district is certain to be largely increased, and will not be less than 4 lakhs of rupees, which will allow the pay of Patwaris to be increased and placed on a better footing, which will ere long be imperatively necessary. As the value of skilled workmen of all descriptions is rising so greatly it will be impossible to secure the services of trained surveyors at less than 12 rupees a month.

5. In nearly all the larger villages, especially along the frontier, Dharwais are now kept by the proprietors; and all the chiefs of tribes, Lugharees, Cosees, Loonds, Goorcharries and Mazuries, keep their own Dharwais. It will therefore only be in the villages along the river banks that the new system will have to be introduced; but I anticipate no difficulty in doing so, as the system is one so congenial to their customs, and will really be cheaper to them than retaining the present Patwaris. As much as possible the remuneration of the Dharwais should be left to the village proprietors, but in case of disputes, the following scale appears an equitable one, according to the usual village rates:—In villages along the river bank 2 topas on every put of grain, or 6 pie per rupee in cash transactions; for cotton and indigo ¼ seer per maund, and for villages watered by hill streams 1 pie per put is the customary fee.

2 topas=10 seers.

1 pie=20 seers.

6. With regard to the accounts to be submitted by the superior Patwaris, the only alteration I would suggest is that, an abstract only of the juma-bundi should be submitted, a form of which is attached, and the other tatements, melan khusrah, juma khurch, and khuteoni and mutation of names, should remain unaltered.

7. To enable the superior Patwaris to prepare these statements, I would suggest that the Dharwais keep the following papers, forms of which are attached:—

1. Juma-bundi.
2. Khuteonee.
3. Dakhil Kharij.
4. Roznamcha.

These forms I have prepared in consultation with Tahseeldar Chimun Mull and my Revenue Superintendent Thara Mull, the best revenue officers in the district, who are intimately acquainted with village details, having had large estates themselves, and having been employed in similar capacities under former rulers to the position they now enjoy. The forms are drawn up in the simplest manner to ensure the insertion of every essential particular connected with the village tenures; and as in the first instance the Dharwais will be Hindus, I beg strongly to recommend that they be allowed to keep these forms as an ordinary "bundee" in the Hindi character; the first would be a "bundee vund," the second a "khata war," the third "bundi intikal," and the last a "roznamcha," in which all transactions should be daily entered, of which no form is given, as not being required.

8. I am glad to be able to report, that the demarcation of village boundaries throughout the district has progressed most favorably; all disputed boundaries have been left over for settlement, this cold season; they are not numerous. In others the boundaries have been marked off, and as soon as the Patwaris have leisure, the hudbust maps shall be taken in hand; a few have been made in the Dajul Tahseel under the superintendence of Tahseeldar Chimun Mull, who takes the greatest interest in everything connected with the improvement of his charge, and to whom I am largely indebted for assistance given in preparing the materials for this report.

No. 1.—*Jumma Bundee or Bundee Vand.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
								Huk zemindari dues collected in payment of Govmt. demand & proprietary rights.							
								In payment of Govt. demand.							
No. of khewut.	Name of holding, whether well or bund.	Name of proprietor and amount of shares.	Name of cultivator, whether hereditary or non-hereditary.	Cultivated area.	Description of crop.	Amount of crop.	Durbundi amount of share allotted in payment of Govt. demand.	In cash.	In kind.	Choongi.	Proprietary rights malikana.	Total.	Name of individual paying the Govmt. demand.	Juma.	Remarks.
1	Lallwalla well.	Moosa 2 shares, Lal 2 shares.	Mitta, non-hereditary cultivator.	10 acres.	Wheat.	40 mds.	$\frac{1}{4}$ share.	...	10 mds.	10 seers.	md. srs. 1 35	mds. srs. 12 5	Moosa.	10 Rs.	Lall has made over the malguzari to Moosa. Choongi is collected by proprietor for charity, only in kind and not in cash.
Do.	Do.	Do.	Do.	4 acres.	Tobacco.	16 mds. sold for 160 Rs.	Do.	40 Rs.	...	...	7 Rs.	47 Rs.	...	...	The land having improved in quality the share allotted for payment of Government demand has been reduced from $\frac{1}{3}$ to $\frac{1}{4}$.
Total,	Do.	Do.	Do.	14 acres.	...	56 mds.	$\frac{1}{4}$ share.	40 Rs.	10 mds.	10 seers.	md. srs 1 35 in kind 7 Rs. cash.	mds. srs. 12 5 47 Rs.	...	...	...

Note to Juma-bundi No. I—by Lieutenant Colonel E. J. Lake, Financial Commissioner Punjab.

In explanation of column 14, which seemed at first sight a repetition of information already given in column 3, I was informed that it was common in these parts for a proprietor to allow another party to hold and manage his estate, on condition of his paying proprietary dues, the occupant of the land paying Government revenue, and providing for village irrigation &c. It is for this class of occupants that column 14 is introduced.

This juma-bundi, and all other information recorded by Dharwais is not in the form of statements with columns as shewn in the specimens given here, but day-books and ledgers are in use for each kind of transaction; thus one day-book and ledger contains all given transactions, another day-book all cash payments and agricultural arrangements—such as death of land holders, terms on which cultivation of land has been given out, &c. Indeed I found a separate ledger kept for money paid on account of canal clearances, and I suppose that this should be shewn in future in the ledger for other cash payments, canal clearances being entered at one end of the ledger, land revenue and cesses at the other.

The Patwari I find is required to submit an abstract juma-bundi, the form of which is given by Captain Minchin; but on the other hand he is required to give in a statement which is called "Dakhil Kharij," in which the name of every proprietor is entered instead of only those holdings which have changed hands. It is therefore a question whether much saving of labour has resulted. I suggest that a register should be kept in which all changes should be recorded year by year for 5 years, and that at the end of every 5th year a detailed juma-bundi should be submitted in which every holding would be entered. This will do away with the objection urged against recording changes only year by year—that several year's papers have to be referred to before one can feel certain that no changes have taken place. I suggest some other improvements also, which I shall refer to in my letter.

No. 2.—Khateoni Malguzari or Bandi Khatawar.

1	2	3	4	5	6	7	8	9	10
Number as per Khewut.	Name of Malguzar.	Name of holding, whether well or bund.	Juma.	Government cesses for road and school fund pay burdar and Patwari's fees.	Total.	Collections and date.	Balance.	Surplus collection.	REMARKS.
1.	Moosa.	Lallwala well.	10 Rs.	Rs. 1 As. 2	Rs. 11 As. 2	8th May 5 Rs. 8th June 5 Rs. 15th do. 1 Rs. 2 As.	...	...	

No. 3.—Mutation of names—Bundi Intikal or Dakhil Kharij.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					TRANSFER EFFECTED DURING THE CURRENT YEAR.						REMAINING IN POSSESSION AT CLOSE OF YEAR.			
Number of field.	Name of the Patti.	Name of the holding, whether well or bund.	Name of the holder as per Khewut.	Extent of share.	Extent of share.	Date of transfer.	Cause of transfer.	Name of transferrer.	Name of transferree.	Value of land transferred.	Name of holder as per Khewut.	Extent of holding.	Amount of juma.	REMARKS.
1.	Rotta Meer Hosein.	Lallwala well.	Moosa.	2 shares.	1 share.	10th July 1863.	By sale.	Moosa.	Lall.	50 Rupees.	Moosa.	1 share.	Rs. 2 As. 8.	

Abstract Jamma Bundee.

1	2	3	4	5	6	7	8	9		10		11		12		13		14	15
No. of wells, bunds or Sylaba and Banjaree lands.	No. of proprietors to the wells, bunds &c.	No. of cultivators, whether hereditary or non-hereditary.	Cultivated area.	Jumma.	Amount of crop.	Description of crop.	Amount of share allotted in payment of Govt. demand.	DETAIL OF THE PROPRIETARY RIGHT.										Number of proprietors paying the Government demand.	REMARKS.
								In payment of the Government demand.		*Choongee.*		*Jagirdar's right.*		*Proprietary right, malikana.*		*Total.*			
								In cash	In kind.	In cash.	In kind.	In cash.	In kind.	In cash.	In kind.	In cash.	In kind.		
																	M. S.		
10 wells,					10 mds.	Wheat,		...	3 mds.	...	10 srs.	...	...	...	8 srs.	...	3 18		
5 bunds, (plots,)					5 do. sold for 5 Rs.	Barley,		1 4	...	0 4 0	...	0 4 0	...	0 8	...	2 4	...		
5 seers of Sylaba lands, (plots,)	20	15 { 5 Hereditary. 10 Non-hereditary.	acrs. 800	Rs. 300	4 mds. sold for 20 Rs.	Tobacco,	From 1/3 to 1/4 varying according to the quality of soil.	5 0	...	0 0 0	...	...	...	2 5	...	7 9	...	15	
					40 mds.	Cotton,		...	10 md.	...	10 srs.	...	...	...	M. S. 1 5	...	11 15		
10 seers of Bunjaree lands.					6 do.	Jowar, and Bajra.		...	1 md.	...	2 srs.	...	...	...	0 8	...	1 10		
Total 30	20	15	800	300	65 mds.	...	...	6 4	14mds.	0 8 0	22 srs.	0 4 0	...	2 13	1 21	9 13 0	16 3	15	

From Major J. R. Becher, Commissioner and Superintendent Dera Division, to D. F. McLeod Esquire, C. B., Financial Commissioner Punjab, No. 198, dated 17th November 1863.

In reply to Financial Commissioner's No. 2730, dated 8th July 18 begs to enclose in original a report by Captain Minchin, Deputy Commissioner of Dera Ghazi Khan, on the reduction of the number of Patwaris and the employment of village Dharwais (measurers). The Commissioner has had so little experience of the duties of Village Accountants, that he does not think it necessary to offer his remarks on the subject, but he agrees that the present system of Patwaris' accounts is unnecessarily elaborate, and greatly detracts from their practical usefulness.

From D. F. McLeod Esquire, C. B. Financial Commissioner Punjab, to R. Davies Esquire, Secretary to Government Punjab, No. 764, dated 25th November 1863.

I have the honor to submit, in original, a docket No. 198, dated 17 November, from the Commissioner Derajat, with enclosures, on the subject of introducing into the Dera Ghazee Khan district, revised arrangements in connection with the position, duties and emoluments of Patwaris, and solicit sanction to the introduction of these arrangements, whereby each village will have its own separate Accountant, or Dharwai, paid by the villagers at rates to be agreed on in communication with them, and each cluster of villages will have over it a superior Accountant, Patwari or Sub Qanungo who will be paid at rates varying from 120 to 150 Rs. per annum, out of a fund formed by setting apart 2 per cent out of the 3 or 4 per cent at present levied for Patwari's fees. The duty of the former would be to keep a roznamchah, and simple forms of detailed accounts, in the character with which they may be familiar; that of the latter, to submit abstracts of these yearly to Government, exercise a general control over the Dharwais, make measurements, and perform such other general duties of an appropriate character, as may be required of them.

2. His Honor the Lieutenant Governor is aware, that the existing arrangements in connexion with Patwaris appear to me to be open to serious objection, and for an expression of my sentiments

on this subject I would refer to the extracts given below from the Annual Revenue Administration Reports.

Extract paras 612 *to* 616 *from the Annual Revenue Administration Report for* 1860-61.

14. Patwaris and their records.

"612. Annexed to the Report of last year will be found a Statement (No. XIV) showing the number, distribution, and allowances of these functionaries—and as it is a document liable to little or no variation, I have not repeated it. Some few District Officers express themselves satisfied with existing arrangements, but this is the exception; and my own conviction is, that no part of our Revenue system has so signally failed, throughout India, as the attempt to keep up a trustworthy record of rights by their means. In those portions of the North-Western Provinces where a really efficient class of Hindi writers have hereditarily held the post of Patwari for generations, and are much knit together with the people—and more especially where they are effectively supervised by a large body of Qanungoes, each having charge of not more than from 20 to 40 villages, and residing for the most part in his pargunnah; much valuable service may no doubt be obtained from both those classes—otherwise I regard them as a delusion and a snare; most dangerous and unsatisfactory perhaps, when most able; and when their accounts are most symmetrically kept.

In my opinion a failure.

More so perhaps, in the Punjab, than in some other parts.

613. Here, in the Punjab, we have been, I think, especially unfortunate in this particular. When we assumed the administration, the only Village Accountant we found, was the weighman or Dharwai; who was ignorant of any written character, but a barbarous description of hieroglyphics termed "Landeh," which he was frequently unable himself to decipher. His retention was deemed inadmissible; and the creation of a body of Village Accountants acquainted with Persian, determined on. The old Kardars and employés of the Sikh Government, the Qanungo families, and a few other classes, supplied material for this in some parts. And where settlements were early set on foot; the task of organizing these was taken up, and pursued with vigour. Next, after a time, it was determined to make surveyors of them, and they were instructed in the use of the plane table. Patwaris' schools were instituted in some districts; and Patwari Instructors sent to them; until at length the Patwaris have become accomplished and well paid Munshis in some parts; and have attained a tolerable amount of proficiency in almost all.

As the entire establishment had here to be created anew—and duties involving much skill and instruction required of them.

614. But all this has been in a great measure incompatible with the maintenance of anything like a real bond of union, between the Patwari and the village or villages of which he is supposed to be the servant—and so long as settlements have been in progress; it has been usual not even to make any attempt to keep Patwaris to their own villages, but those who are most intelligent and best instructed, are employed on general service; for aiding in the preparation of the papers of all parts—the local Patwaris being occasionally more or less associated with them, if competent. In many districts, the Patwaris' fees have been collected, not by themselves, but by the Tahsildars, and paid over to them, in many places, according to an entirely arbitrary distribution. In some parts these practices still prevail—and a recurrence to the normal usage, of each Patwari collecting his own dues, is looked forward to by the local officers with dismal forebodings.

Hence a great want of union between them and the zemindars has very generally resulted.

615. The general result is, I have no hesitation in asserting, that there is little or no bond, for the most part, between the Patwari and his villages—and that to regard the records kept by them as really trustworthy, is as a general rule, impossible. In not a few instances, they are positively mischievous; as well as offensive to the people—and Mr. Arthur Brandreth even asserts that, where they are highly paid, the lumberdars sometimes dare not sit down in their presence. Where District Officers have devoted especial

Though where especial attention is paid to the matter by District Officers the evils connected with them are no doubt for a time to a great degree checked.

attention to this matter, as Mr. Blyth in Amritsur, and Mr. Prinsep in Sealkote, where great efforts are made to see that the roznamcha is correctly and punctually filled in; and other salutary checks have been established; much, no doubt, may be and has been done, towards rendering them useful and trustworthy for the time—but there is no principle of vitality or self-support in the system—and a brief period of inattention will suffice to throw all into confusion.

No permanent remedy is however likely in my opinion to be found unless their control be entrusted to the people themselves.

616. I have watched the progress of this matter in the Punjab for a period of [illegible] years. I have myself taken part, whether willingly or unwillingly, in most of what I have above deprecated—and I have come to the settled conclusion, that for us the task of keeping up a really trustworthy record, through any such instrumentality is hopeless. I think at the same time, that if there be any part of the administration, which might safely, appropriately, and beneficially be made over to the people themselves, it is this.

Under an organization suitable for the maintenance of a permanent Record Office.

It is my belief, that for a comparatively small outlay, a Record Office might be established in each pergunnah under the management of men of the pergunnah, including the Qanungo; and quite apart from our District or Tahsil Offices; which would possess in itself the elements of great usefulness, fo r statistical and administrative purposes, in a great variety of ways.

Extract paras 105 *to* 110 *from the Annual Revenue Administration Report for* 1861-62.

Patwaris and their records.

105. There can be no doubt that our Patwaris generally are improving in their training and acquirements; though there are great diversities in this respect in different districts. I am surprised to learn that in Delhi, the centre to some extent, of Persian literature in Hindustan, 90 Patwaris out of 118 know no character but Hindi—while in Karnal adjoining, 117 are said not to know either Persian or Nagri; though it is not stated what character they do know and make use of. I have myself always been of opinion, that amongst a population generally using the Nagri character or its congeners, it is a mistake to require Patwaris to keep their accounts in Persian; and I have been somewhat agreeably surprised, to find that in the Delhi Division the use of that character was not enforced under the Government of the North-Western Provinces; but it seems clear that no great pains has been heretofore taken in their training, and Mr. Melvill remarks that the securing of efficient Patwaris is one of the most pressing wants of the Division. In the Hissar Division, the same remark to some extent applies. In the Cis-Sutlej Division, much has been done by successive officers of experience and ability towards educating the Patwaris; and Major McNeile, than whom no one is more discriminating, states that those of Ludhiana are efficient; and the post in request.

106. Nowhere, I believe, has greater pains been taken in this matter than in the Jalandhur Doab, under the auspices of Colonel Lake. In Kangra, where large tracts, containing numerous villages, are necessarily made over to a single Patwari, it is hardly possible to effect much in this direction. But in Jalandhur and Hushiarpur, the efforts made to train them have for some years been incessant and very thoughtfully regulated,—yet the Deputy Commissioner of the former district states that his Patwaris are mostly wretched. I cannot but think that he is somewhat too rigid in his judgment, and am myself cognizant of several accomplished Patwaris in the Jalandhur district; while the Deputy Commissioner of Hushiarpur states that those of his district are yearly advancing in efficiency. Similar remarks are made by Captain Paske, in respect to Gujerat, and by the Deputy Commissioners of Hazara, Peshawur, Muzaffargurh and some other districts; but the general verdict in regard to the Patwaris is not very favourable.

107. In the Amritsur district, especial pains had been taken for a series of years; while Mr. Blyth was attached to that district; to instruct this class of persons, and they are there required yearly to give in a tracing from the Shajrah maps of their villages, with

corresponding Khasrahs, showing all changes as they occur—yet in regard to their records the Commissioner, Mr. Prinsep, remarks 'it would be a difficulty to say that these papers are really useful or even moderately reliable; they certainly give a deal of trouble in their preparation.' While Mr. Robert Egerton, Deputy Commissioner of Gurdaspur, who is one of our soundest Revenue Officers, remarks that the yearly 'changes are so numerous, that it requires more skill than the Patwaris possess to represent them properly on the Shajrah.'

108. From the remarks made by Colonel Lake, I gather that the impression conveyed by those paragraphs of my last year's Report which referred to Patwaris, is that I am opposed to their education, but this is by no means the fact; in so far as their training may be not inconsistent with other considerations, which in my opinion are of the very first importance—and it is only in consequence of their proficiency appearing to me to be very generally regarded as of sufficient importance to set aside all other considerations; that I have opposed myself to the course pursued.

109. The two points on which that course appears to me erroneous are—first, that it tends to separate the interests of the Patwari from those of the villagers; by placing several mahals, under the charge of each where these happen not to be very large; as well as by their training and mode of treatment generally;—and secondly, that it subjects them to a control which is, as a rule, quite ineffective, a single Qanungo and Naib in each purgunnah, controlled by a Saddar Qanungo, under the eye of the Deputy Commissioner being in my opinion, wholly incompetent to supervise or check the returns of an entire district—and as a consequence of these two defects, I have no hesitation in repeating an expression of the conviction that our Patwaris' papers, as prepared and given in at present, can never be permanently relied on; however accomplished these functionaries may become.

110. As a remedy for the last of these objections, I have suggested that some kind of Pergunnah Council be formed, on whom should be devolved the task of supervising the returns and maintaining at all times a really reliable record—and as we make greater progress in associating the yeomanry and burgesses of the country with us, in the details of the administration, I feel persuaded that something of the kind will be found practicable and necessary. Towards remedying the former, a suggestion was made some time ago by Mr. Edward Brandreth, and introduced by way of experiment into Bullabgarh; which I feel hopeful may in the end prove successful. According to his plan, each village is allowed to retain its own Accountant, selected, paid, and controlled by itself, while over every few villages is placed a superior Patwari; who must virtually become a sort of Naib Qanungo, receiving a portion of the per-centage levied from all the villages placed under him. This arrangement has not as yet been favorably reported on—but before definitively expressing an opinion regarding it, I am desirous of satisfying myself more fully than at present, how it has been carried out. It appears to me to contain the germs of a radical improvement."

Extract paras 69 *to* 71 *from the Annual Revenue Administration Report for* 1862-63.

Patwaris and their records.

69. On the subject of Patwaris, I expressed myself at so much length in my last report, that I need not dwell on it here—but with reference to the remarks contained in para: 13 of your letter; No. 956 dated 29th December 1862, I would observe that my own sentiments, no less than the injunctions of His Honor the Lieutenant Governor, would prompt me strenuously to oppose any relaxation in the efforts to improve and train this class—and until some improved system shall have been introduced there can be no doubt that it is of the utmost importance for District Officers to maintain the existing one in full force and efficiency; and to exercise a vigorous control over the proceedings of the Patwaris in all respects. There can be no doubt either, that by really effective arrangements, and close scrutiny, they may be rendered most efficient, and more or less trustworthy. But it is equally certain that the very greatest differences in this respect, exist in different districts, and that even where the greatest pains have been taken a most

unsatisfactory state of things may be found to exist; as shewn in the subjoined* extr from para 10 of Administration Report of the Deputy Commissioner of Jalandhur.

70. Where however, a large number of villages is entrusted to one Patwari; I not believe that by any expedient he can be rendered efficient; or his papers even mod ately satisfactory or reliable—neither do I believe, that under the existing system, is any guarantee for the performance of any efficiency or trustworthiness that may time be attained. It is for these reasons, that I desire a change; and I am not wi hope of seeing a different system fairly tried. Captain Minchin has expressed his wil ness at once to introduce experimentally into Dera Gazee Khan, the system to wh have heretofore adverted—and I may perhaps find others equally favorably dis towards it. In the meantime, however, it has been summarily brought to an end in Bal garh; both Deputy Commissioner and Commissioner being opposed to it—and un shall have elsewhere proved successful; it would be vain, where this is the case, to urg being persisted in.

71. In Delhi and Gurgaon, the renewal of the papers destroyed during the mu is in progress—and in the former, nearly complete. In Karnal the Deputy Commiss states that most of the old Patwaris are singularly deficient in almost every ne quality. In the Hissar Division, satisfactory progress is reported in training them Amballa, they are said to have attained a degree of excellence not surpassed in district in the Punjab. In Gujerat, it is stated that the village communities have to place greater reliance on them than formerly—and in Shahpur they are said to usually well trained and efficient; which is attributed mainly to the length of time which settlement operations have been in progress there. The remarks of other Dis Officers do not appear to call for special mention."

My objections to these arrangements may be summed up as follo that the joint responsibility to the villagers and to Government renders position of the Patwari a very anomalous and unsatisfactory one; that fact of his usually having more than one village, and frequently a consi able number, entrusted to him, renders it impossible for him to iden himself with any; and that the labour involved in preparing detai

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* "10. The work of the Patwaris is improving; some of the most incompetent of this class have been got rid of; six have died, and temporary substitutes perform duties in many circles, where the Patwaris are incapable of performing them themselves.

The following will shew the changes which have taken place, and the present condi of the establishment:—

Dismissed, ...	15	These have been replaced by others.
Died, ...	6	
Quite incapable, ...	27	
Nearly so, but assisted by their relations, ...	54	
Requiring the assistance of strangers to perform their duties, ...	27	
Total, ...	108	

This leaves a balance of 264, of whom 73 perform good work. The remain manage to get through their duties in person. This is an immense improvement on state of things I found here three years ago. No annual papers had been sent in some years—and for Jalandhar itself none had ever been prepared. In the place of th dismissed, relatives have been appointed, who are chiefly children at school. These dr half the pay, and the other half is given to a substitute, who does the real work. Tho somewhat contrary to natural principles of equity, this proceeding is quite in accord with oriental ideas."

accounts for the whole of his large charge is so great, as exceedingly to impair both the value of his returns, and his general usefulness—while at the same time, if detailed accounts be not kept, the Government requirements cannot be adequately fulfilled. To remedy these defects it has for some time past appeared to me desirable to introduce some such modification as that which has been sketched above.

3. Accordingly, when passing through the Dera Ghazi Khan district, at the commencement of the present year, as it appeared to me that the arrangements of that district, as now existing in regard to Patwaris, are in so incomplete a state as to admit of a modification being experimentally introduced, without difficulty or any risk of serious inconvenience, I addressed to the Deputy Commissioner, in a memorandum dated 25th February 1863, the query transcribed in the margin, and finding from his reply, that he was entirely favorable to the scheme; I requested Commissioner in a letter dated 8th July last, to obtain from Captain Minchin, on his return from leave, a report on the details of the arrangements, which he would propose.

Would it be practicable, and acceptable to the people to have the Dharwai restored to his old post of Village Accountant on a somewhat improved footing? he being obliged to keep a roznamchah in a prescribed form, to prepare yearly an abstract of cultivation and of collections and balances, and receiving in return 25 or 30 Rs. pay per mensem, with provision to keep a shop or follow other occupation, a superior Patwari being appointed over every 9 or 10 villages, receiving not less than Rs. 120 to 150 per annum, and giving in return to Government in a greatly reduced form, from that at present in use, in fact a mere abstract prepared from the Dharwai's books.

4. This he has now submitted, in the enclosure of his letter accompanying, and I feel indebted to Captain Minchin for the intelligence and energy with which he has entered into the matter. My original proposition was not exactly that the Dhurwais should be paid by a share of the produce, but I think it important that they should be remunerated in the mode most acceptable to the people, and I have every confidence that Captain Minchin if allowed the opportunity will satisfactorily arrange the details.

5. The actual result on many points must be left to be determined by experience, and I do not therefore think it necessary, in this place, to enter on these; but will only add that I feel very sanguine of the scheme proving successful, and I am exceedingly desirous that it be allowed a trial in the Dera Ghazi Khan district, under its present zealous and intelligent Deputy Commissioner.

From R. H. Davies, Esquire, Secretary to Government Punjab, to D. F. McLeod, Esquire, C. B., Financial Commissioner Punjab, No. 76 dated 4th February 1864.

In reply to your letter No. 764 dated 25th November last, the enclos of which are returned, I am directed to convey the sanction of the Govern ment to the introduction into the Dera Ghazee Khan district, of the revis arrangements proposed in connection with the position, duties and emol ments of Patwaris, as an experiment for one year—a report being submitt on the subject thereafter.

2. As, however, the forms in which the Patwaris' papers are propo to be kept depend on the judgment of two Native officials only, it is sugges that they should be examined and reported on by others before adopti particularly by some experienced Patwaris.

From D. F. McLeod, Esquire, C. B., Financial Commissioner Punj to Major J. R. Becher, Commissioner and Superintendent Derajat Division, No. 386 *dated 11th February* 1864.

With reference to his No. 198 dated 17th November last, forw copies of Financial Commissioner's No. 764 dated 25th idem to the Govern ment Punjab, and the reply No. 76 dated 4th current, sanctioning the exper mental introduction into the Dera Ghazee Khan district, of revised arrang ments in connection with the position, duties and emoluments of Patwar and requests that Captain Minchin be directed at once to carry out th arrangements proposed, and that the forms of statements proposed by hi should be first carefully scrutinized by some of the experienced officials i his division.

2. Captain Minchin's report and enclosures are returned herewi copies having been retained for record in this office.

From Captain C. Minchin, Deputy Commissioner Derah Ghazee Khan, Major F. R. Pollock, Commissioner and Superintedent Derajat Division, No. 440 *dated 30th October* 1865.

With reference to your No. 106 dated 13th May, forwarding copy of No 1338 dated 9th May last, from Financial Commissioner, with enclosure fro

the Punjab Government, sanctioning the report on Patwaris being deferred till September, I have now the honor to submit this report, and to state that as all the arrangements connected with the case had been carried out by me, Lieutenant Wace, who was officiating for me during my absence on leave, thought it better to let it lie over till my return, and heavy press of work has prevented my submitting it till now.

New system has been in operation 18 months, and works well.

2. The new system has now been in operation for nearly 18 months, and generally has worked exceedingly well.

103 Patwaris were formerly employed; many of them were under paid and not up to the work.

3. Under the old system there were 103 Patwaris employed in the district, who were remunerated by a rate levied on the zemindars varying from 3 to 5 per cent. on the juma; some of the Patwaris were very fairly remunerated, but a great number, particularly those employed on the frontier villages, were badly paid, the consequence was, that it was very difficult to get good men for the work.

Under the new system 46 of the best men retained as Patwaris and the best of the remainder appointed Dhurwais.

4. In introducing the new system we were able to select 46 of the best men to be retained as Patwaris or Naib Canoongoes; of the remainder some of the best men have been appointed Dharwais at the request of the zemindars, and their experience of the Patwaris' duties has been very useful in carrying out the new system. These Patwaris are stationed as follows:—

Distribution of Patwaris.

Dera	Tahseel,	20 to	superintendent	162	villages.
Sungur	do.	8 to	do.	81	do.
Dajul	do.	10 to	do.	68	do.
Rajunpoor	do.	8 to	do.	60	do.

The Sungur villages are small and closely grouped together, while those in the Dajul Tahseel are large and scattered, which will account for the apparent discrepancy in the number of Patwaris as compared with the number of villages. On an average each Patwari has 7 or 8 villages under his charge.

Class and pay of Patwaris.

5. The Patwaris are divided into 3 classes, and paid as follows:—

1st Class	10	Patwaris,	@ 150 Rs.	a year.
2nd do.	20	do.	@ 120 Rs.	do.
3rd do.	16	do.	@ 100 Rs.	do.

Thus none get less than 100 Rs. a year; but considering the duties they have to perform I think they are under-paid, and recommend that if Government will sanction the continuance of the new system, that their pay may be raised slightly, so that the lowest class may receive 120 Rs. a year and the highest 160 Rs., the pay of the second class being raised to 5 or 10 Rs. additional, according to the funds at our disposal, which I believe will easily be able to meet this additional charge. I also recommend that the Patwaris when employed in making local surveys &c., may be paid according to a fixed scale, which I will submit hereafter for your sanction.

Increase of pay recommended.

6. Their pay is levied by a levy of 2 per cent on the juma, but this I find falls unequally on the zemindars, and requires to be altered. The district is divided into two kinds of land, known as "Puchad" or lands irrigated by hill streams, and "Scinde" or lands within the influence of the river—whether watered by wells, canals or inundation. The Puchad lands are of enormous extent, some of the villages comprising within their area as much as 1 square miles; being dependent on the hill streams for irrigation, their cultivation is precarious, some years they are waste, and in others the extent of land under cultivation is enormous. The lands are divided off into bunds, which are held in joint proprietary partnership by a large community. The Government demand assessed on the village is distributed over these lands, which are thus nominally taxed to the extent of one or two annas each. The system of butâi is in vogue and a Dharwai has always been retained by the village community; two per cent on their light juma is scarcely felt in a good season, or even in an ordinary one, and the substitution of a Dharwai for a Patwari is a reduction of at least 3 per cent on the juma as compared with what they formerly paid. On the other hand, in the Scinde villages the lands are broken up into farms and separate holdings. No Dharwais have been kept up since the old Sikh system of taking the Government share in kind was done away with, and the lands being more highly cultivated, and the increased demand owing to canal irrigation being incorporated with the Government demand on the land, the per-centage of 2 Rs. falls heavier on them than on the Puchad villages, and the payment of

The levy of 2 per cent on the juma falls unequally on the zemindars.

District divided into two kinds of lands Puchad and Scinde.

Description of Puchad villages.

Description of Scinde villages.

Statement exhibiting actual cost of Dharwai and Patwari as it falls on the zemindars.

a Dharwai is by their own showing an increase of about 2 per cent. above what they formerly paid, or about 5 instead of 3 per cent. The produce of a village assessed at 500 Rs. was admitted to be 1,000 maunds during the past year, including jowar, bajra and wheat.

The payment of a Dharwai is on the average about 2 topas per puth, or about 5 chitacks to the maund, so that 5,000 chitacks is equivalent nearly to 8 maunds, the average value of grain is 20 seers to the Rupee—or 16 Rupees—add payment of Patwari at 2 per cent on the juma 10 Rupees, total cost to zemindars 26 Rupees, or a little more than 5 per cent. Formerly 3 per cent. only was levied on the Scinde villages, which however, was liable to be raised to 5 per cent, so that the cost is not excessive, and a little re-adjustment of the rates, lowering the per-centage in the Scinde villages and raising it in the Puchad villages will soon correct it. I have enlarged on this point as it is the only one which can in any way be considered a drawback to the new system, and it is the only complaint regarding it made by the zemindars. There is no doubt that to a certain extent it is true, as I find that the Dharwais under-state the actual village produce; the zemindars, even the most enlightened, cannot bear that their actual cultivation should be known; they dread its being employed at the settlement to enhance the demand, and therefore try to reduce the reported out-turn. In reality the payment of the Dharwais in kind is hardly felt by them like a cash payment would be, so that no complaints have ever been preferred.

7. All the Patwaris have learnt surveying with the plane table, and they have been particularly useful in preparing maps of boundary disputes &c. During the past year they must have prepared nearly 1,000 such plans, which on testing have generally been found perfectly trustworthy. In a district like this, where there has been no regular settlement, and the number of claims to real property preferred are very large, the advantage of having persons in Government employ able to make surveys is very great.

8. Under the Patwaris there are 279 Dharwais to look after 371 villages, who are thus distributed:—

Derah Tahseel,	..	136 Dharwais to	162 villages.
Sungur ditto,	..	57 ditto	81 ditto.

Dajul ditto,	..	55	ditto	68	ditto.
Rajunpore ditto,	..	31	ditto	60	ditto.

Where the villages are very small and grouped together, they have be placed in charge of one Dharwai, or there are two and three Dharw attached to a large village, who again are also employed at some sm villages. Thus, Sewa Mull is Dharwai of the following villag Sewa Mull was one of the old Patwaris, and except that he was un quainted with the Persian character and a able to write Hindi, one of the best. I lives at Sheroo, in the centre of the villag and carries on the duty most satisfactori This is an exceptional case, the man bei nominated to the charge of many villages the express request of the villagers; generally the Dharwais have only or two under their charge, or as in the villages of Sumeeno, Chotalla Soba who have three Dharwais, who are associated together to carry on duties satisfactorily. Thus Rawul Dass and Bowanee Dass are the Dharw for Sumeeno—but Bowanee Dass assists Assa Mull in looking after Chota and Assa Mull is again employed with Kilindur Mull in the village of S The appointment of Dharwais was left as much as possible to the vill communities. Many of the Dharwais, as in the case of Sewa Mull, und stand the work thoroughly—but others are nearly useless and unable assist the Patwaris properly in introducing a new system. It is imposs to perfect it in one year—we have however in the old village serva employed prior to annexation, as Kardars, Mohurrirs, Dharwais, &c., t element exactly required for the Dharwais, and with time and attention shall be able to obtain what we really require, viz. a village servant thorough acquainted with the interior economy of the village, who can keep in Hi the necessary data to enable the Patwari to prepare his yearly papers wi facility.

Bhet Darrye,	Juma	43	Rupees.
Jhaujla,	,,	240	,,
Sawanwallee,	,,	150	,,
Sheroo,	,,	500	,,
Kotla Deen Shah,	,,	490	,,
Lushani,	,,	718	,,
Macheewalla,	,,	321	,,
Total Juma,		1,962	

9. All the Tahsildars report favorably on the new system, but th notice, as I have already pointed out, that it is a little more expensive th the old system, and that the zemindars have so much power over the Dhar wais that the latter dare not give an exact account of the village cultivatio Tahsildar Chimun Mull of Derah has worked most cordially in trying t carry out the new system, visiting the Dharwais periodically, examining thei

accounts, being able to read Hindi himself, and putting them in the right way to work. He suggested that at the settlement a plot of land in the centre of the group of villages in charge of each Patwari should be given him rent free, so that only the cost of the Dharwais should fall on the community, or that a grant of land be given to the Dharwais in each village, and only the per-centage on the juma be collected for the Patwaris. There is no doubt that this would be a relief to the village communities, and might be arranged without any loss to Government. The second proposition is the one which appears to me to be the best, as it would render the Dharwais independent, and the per-centage on the juma leaves a margin after paying the Patwaris, which is much required to meet contingent expenses, cost of plane tables, compasses, &c., which would have otherwise to be raised separately.

10. The funds realized by the per-centage on the juma during the past year was 6,400 rupees, of this, 5,500 rupees has been paid to the Patwaris, as follows:—

10 at 150 rupees, ...	1,500
20 at 120 ,, ...	2,400
16 at 100 ,, ...	1,600
Total, ...	5,500

leaving a balance of 900 rupees in hand; of this, 200 rupees has been expended in making up plane tables, purchase of compasses, chains, &c., and 220 rupees more will be required to supply each Patwari with his own table, compass, chains, &c. This leaves a balance of 480 rupees, which I recommend may be devoted to defray the cost of a good teacher at each Tahsil for 6 months to teach the Patwaris, who are most backward in surveying, and keep the others up to the work, as nothing but constant practice will enable them completely to master the art; they can also teach some of the better class of Dharwais;—the pay of the teacher to be 20 rupees a month, or 80 rupees for four teachers, and 480 rupees for the six months.

11. The Patwaris sent in the accounts for 1863-64 half in the old form and half in the new: that is, the khurreef accounts for 1863 were in the old form and the rubbee of 1864 in the new. The accounts for the past year 1864-65 have not yet I regret to say been submitted, but they will be by the end of December; the reason for the delay is that the Patwaris have for some time been employed in enquiries as to the extent of injury to the crops by locusts in July last, and to the general inquiry about the prospects of the

harvest in consequence of the great dearth throughout the district; if it had not been for this the yearly papers would have been submitted.

12. In conclusion, I beg to state that in my opinion as regards this district the system of Dharwais superintended by Patwaris or N Kanoongoes is a vast improvement over the old system, and I trust the Government will sanction its continuance. In the course of the year I shall be able to replace the useless Dharwais by men better able to carry on the duties, and to correct the other defects now apparent. The new form of Patwaris' papers has been found to work very well, and I have been careful to obtain the opinions of the most experienced Patwaris on the subject. To lighten their labours, I have been obliged to make a slight alteration in Statement No. 3—mutation of names. It was intended that the names of all the fields and pattidars should have been entered in full and 3 copies kept—but I have been obliged to alter the order, only one copy is to be prepared in detail to be kept at the Tahsil—and only the actual changes taking place during the year are to be entered in the Statement sent to the Sudder—the labor in preparing 3 copies being a great hindrance to their early submission.

From Major F. R. Pollock, Commissioner and Superintendent Derajat Division, to Lieutenant Colonel E. Lake, Financial Commissioner Punjab, No. 156 *dated* 14*th November* 1865.

With reference to the correspondence marginally noted, I have now the honor to annex a full and interesting report by Captain Minchin, Officiating Deputy Commissioner Dera Ghazee Khan district, on the working of the new system of Patwaris and Dharwais, which was introduced by him *tentatively* under the orders of and in immediate communication with your predecessor.

Letter No. 2730 dated 22nd July 1863, from Financial Commissioner Punjab, to Commissioner and Superintendent Derajat Division.
Letter No. 198 dated 17th November 1863, from Commissioner Derajat Division, to Financial Commissioner.
Letter No. 386 dated 11th February 1864, from Financial Commissioner to Commissioner and Superintendent.

2. The result has been most satisfactory, and fully justifies the expectations entertained by Mr. McLeod that in Captain Minchin's hands the experiment would prove successful; the delay that has occurred in submitting the report is accounted for, and Deputy Commissioner now writes with 15 months experience of the new system.

3. Under the old one it was difficult to prevent the preparation of the village papers from running hopelessly into arrears, and when received no one had the hardihood to believe in them.

4. The 64 Patwaris retained on the establishment can, with the assistance of the Dharwais, really supply useful returns, and where these are incorrect it is not for want of leisure but from a deliberate intention to mislead the Government by understating the produce of the villages. Under any system such attempts will be made, and an intelligent official will not be deceived by them.

5. I strongly recommend that the employment of both Patwaris and Dharwais may be continued, and that as proposed by Officiating Deputy Commissioner in para. 5 the lowest class of the former may receive Rs. 120 per annum, the second grade Rs. 140, and the senior grade Rs. 160. It also seems to me a good suggestion that they should be separately remunerated according to a fair scale for maps and surveys.

6. As regards the future method of paying both Patwaris and Dharwais, that is a question that may well lie over till the approaching settlement. I am inclined to think that the proposal in para. 9 might be entertained with advantage—*i. e.*, the paying the Dharwais by a plot of land in each village.

7. In conclusion I trust that Captain Minchin will be considered to have earned your thanks for the pains and thought he has devoted to this subject ; and I have to solicit permission to apply the balance in hand of the Patwaris' Fund to the entertainment for 6 months of trained teachers for each of the four Tahsils, as there will be future savings, and it is important to get intelligent reliable teachers. I would propose Rs. 30 per mensem, in lieu of 20, the appointment being of a temporary nature.

From Lieutenant Colonel E. Lake, Financial Commissioner for the Punjab, to T. H. Thornton, Esquire, Secretary to Government Punjab, No. 701 *dated* 27*th November* 1865.

At the recommendation of His Honor the Lieutenant Governor when holding my present office, arrangements were experimentally introduced into the Dera Ghazee Khan district, under which each village as a rule would have its own Accountant, who would prepare returns in the character with

which he was most familiar and in the simplest form, while above them w be a superior class of functionaries who would render the accounts for co nient clusters of villages in the language prescribed by the Court, and in more elaborate form required by Government. have now received reports* from the Deputy C missioner Dera Ghazee Khan and the Commissi of the Derajat reporting upon this experiment, and I beg not only to su them, but the former correspondence which was returned with your l No. 76 dated 4th February 1864.

* No. 156 dated 14th current from Commissioner Derajat, with enclosure.

2. Ordinarily I should have been disposed to defer my own re until I had visited the Dera Ghazee Khan district and had inspected s of the papers—were it not that certain points raised in the correspond call for immediate orders and that a report upon this subject has been over due.

3. Although I concur with the Commissioner in thinking that Cap Minchin is entitled to praise for the pains and labour he has devoted to experiment, I am not prepared to endorse the opinion expressed that experiment has proved successful; for while on one hand it is admitted it presses more expensively upon all villages which are not within influence of hill stream irrigation, much of the information recorded by Dharwais is avowedly incorrect, and the returns for the year 1864-65 had been rendered when the Deputy Commissioner of Dera Ghazee Khan mitted his report, and from the papers now before me I do not gather any special advantages have resulted from the new system introdu for if, as stated by the Commissioner "it was difficult (formerly) to pr the preparation of the village papers from running hopelessly into arr and when received no one had the hardihood to believe in them," this not shew that the new system is better than the old, but that the old sy was imperfectly worked.

4. At the same time I do not intend by these remarks to condem new system, which on the contrary appears to me based upon a correct ciple, as I have mentioned in para. 124 of my Revenue Report for 186 and I support the recommendation of the local authorities that the ex ment on its present footing be continued until the next settlement, whe settlement department will have an excellent opportunity of determ under which of the two systems the most reliable information is obta I am averse to any proposal to increase the pay of the Patwaris, if t

to be done at the expense either of the State or of the people, or in any other way except by reducing the present number of Patwaris, that is if the Deputy Commissioner would prefer having fewer men on better pay.

Extract para. 124 from the Annual Revenue Report for 1864-65.

"124. The Deputy Commissioner of Dera Ghazee Khan has asked permission to defer his report upon the experiment now being made in his district, similar in character to that referred to in para 110 of the Revenue Report of this office for 1861-62, that is, each village retains its own Accountant, while over every four villages is placed a superior Patwari. The principle of this arrangement is similar to that adopted in the revised system of accounts under which Treasury officers record all transactions in the simplest form, while the more minute and elaborate classification of those accounts devolves upon officials in a controlling office who have been specially instructed in this branch of work."

Dera Ghazee Khan district, Patwaris.

5. Instead of appointing Teachers for Patwaris as proposed by the Deputy Commissioner and Commissioner, I would recommend that sixteen of the most intelligent Patwaris be sent to the Commissioner of Settlement, with the view of their taking part in the settlement work now being carried on under his orders, and of their being carefully instructed in their duties. The best among them on their return to the frontier might be employed in training the other Patwaris, and thereby prepare the way for the settlement which is eventually to be extended to the frontier districts. During their deputation the Patwaris should receive an extra allowance of five rupees each a month, and during the time of their absence the submission of their returns might be in abeyance. I would recommend in like manner that intelligent Patwaris be sent from the districts of Dera Ismael Khan and Bunnoo to be carefully instructed in settlement duties under the orders of the Settlement Commissioner—a staff of trained Patwaris in each frontier district will form a very important nucleus for carrying on sucessfully settlement operations.

6. After paying a good deal of attention to the preparation of Patwaris' papers, I have come to the conclusion that we shall never get satisfactory returns, unless we not only simplify them, but allow them to be submitted at longer intervals: at present we aim to show in annual returns I, the accounts of every land-holder in an estate; II, the "status" of landed property for every individual who has a lien therein. Now, as regards the first, a day-book and ledger properly kept up will show everything in much more satisfactory detail than can ever be shown in annual returns; and as regards the second, quinquennial instead of annual returns should be rendered. Hitherto by attempting to obtain information in a condensed form in too much detail and too frequently we have only succeeded in lumbering our

record shelves with papers in the correctness of which even the m credulous do not believe. This however opens up the general questi Patwaris' papers, which it is not convenient to discuss further in this co munication, which refers to a special subject.

From T. H. Thornton, Equire, Secretary to Government Punjab, to Lieutenant Colonel E. Lake, Financial Commissioner Punjab, No. 821 *dated* 18*th December* 1865.

I have received and laid before the Hon'ble the Lieutenant Govern your letter No. 701 of the 27th ultimo, and its enclosures (herewith return relating to the working of the new Patwari system in the Derah Gha Khan district, and in reply I am directed to convey His Honor's rema and orders thereon as follows :—

2. The Lieutenant-Governor quite concurs in the remarks contai in your sixth paragraph concerning the unsatisfactory nature of the pap rendered by Patwaris, and trusts that you may be able on your approachi visit to Derah Ghazee Khan, after examining the returns given in, and disc sing the matter fully with Captain Minchin, to determine on the simpl form of returns which will suffice for the purposes required, of the Dhar and the Patwari respectively, as well as on the extent to which the frequ of submission of these returns can be safely diminished.

3. His Honor also agrees with you in thinking that the deputati of the best of the existing Patwaris to be trained under the Commissio of Settlements will be preferable to entertaining Patwari teachers; and accordingly authorizes you to communicate at once with the Commissio of Settlements, with a view to carrying out this arrangement, which m with advantage be extended if possible also to Derah Ismael Khan a Bunnoo, provided the requisite funds are available.

4. His Honor considers it however, of the first importance, that t Patwaris be well paid, at this early stage, and that a gradation of adequ salaries be established, to be assigned according to merit, as the success the new arrangement must depend almost entirely on the efficiency and w with which these Patwaris fulfil the duties of supervising and controlling t Dharwais on the one hand, and of compiling and abstracting their retur on the other; and as it appears that a surplus already exists sufficient to afford the required increase without making any additional demand on th

people, His Honor is of opinion that the measures recommended in the fifth paragraph of the Commissioner's letter should at once be carried out, so far as may be practicable.

5. Whether or not greater correctness and truthfulness have as yet been attained by the new system, as compared with the old, there can, in the Lieutenant-Governor's opinion, be no doubt whatever that Captain Minchin has shown much tact, judgment, and zeal in bringing the new arrangements into such shape as to admit of the new system being fairly tried. It could not be expected that it could work great results in so short a time, but the principle on which it is based being admitted,—*viz.* that details shall be filled in by an inferior class of accountants dependent on the people, and the whole results checked and placed in a form suited for Government purposes by a superior class of accountants, who shall be essentially responsible to Government,—it only remains that we endeavour to have this principle ully worked out in the best and most effective manner; and it is matter for congratulation that, as regards one district at all events, things have been put in such a train as to afford a fair opportunity of effecting this by improving all that may appear defective and adding to existing arrangements where addition may appear to be called for.

6. The Lieutenant-Governor therefore requests that his acknowledgment may be conveyed to Captain Minchin for his zealous and successful exertions thus far, and every assistance should be afforded him towards introducing the same system, with such improvements as may suggest themselves, into the district of Bunnoo likewise, to which he is about to be transferred shortly.

7. I am to request that copies of the correspondence may be communicated to the Settlement Commissioner, in the hope that he may able to introduce arrangements, more or less analogous, into the districts in which his own operations are carried on.

From Lieutenant Colonel E. Lake, Financial Commissioner Punjab, to Major F. R. Pollock, Commissioner and Superintendent Derajat Division, No. 294 dated 22nd January 1866.

I have the honor to forward extract paras. 3, 4, 5 and 6 of a letter No. 701 dated 27th November 1865, I addressed to the Secretary to the Punjab

Government, regarding the Patwari experiment introduced into the Dera Ghazi Khan district by Captain Minchin, and I took the opportunity of submitting in original your letter No. 156 dated 14th November 1865, with enclosures and I beg now to forward for your information, the copy of letter No. 821 dated 18th December 1865, conveying the remarks and orders of His Honor the Lieutenant Governor on this subject.

2. I purposely delayed this communication to you as I wished to have first an opportunity of testing some of these papers myself. This I have now had, and I have further had the advantage of conferring personally with Captain Minchin, and Tehseeldar Chimmun Mull, whose valuable co-operation has been acknowledged more than once by Captain Minchin.

3. I was much pleased with the fullness and completeness of the information regarding each holding which had been recorded by the "Dharwai." The distinctive features of the system appear to be—I, the "Dharwai" is not only the nominee of the community whose accounts he keeps, but his intimate local knowledge greatly facilitates his labours; II, he keeps his accounts in the language with which both he and the people are most familiar, and while the points on which he is bound to record information are prescribed he is allowed to keep this information in any form or order which best suits him; a statement with its prescribed columns which is our favorite mode of requiring information utterly bewilders men who are unaccustomed to its use, and thus it is found, that the "Dharwai" who is left to himself carefully eschews it, and adopts instead III, day-books and ledgers for each kind of transaction. Thus one day-book and its corresponding ledger is kept for all payments in cash, agricultural arrangements and changes of the year, another day-book and its corresponding ledger is kept for all grain transactions, showing for every holding in an estate the kind of crop raised, the out-turn of grain, and the mode in which it was distributed between the parties who had an interest therein.

4. As regards the Patwaris or upper class of Accountants, the main difference is that, while in Dera Ghazi Khan a detailed jumma-bundee is dispensed with, and an abstract is submitted instead, on the other hand the dakhil kharij statement as it is called contains every holding in detail instead of only those holdings in which changes have taken place during the year, as is the practice in other parts of the Punjab. The reason urged for giving this statement in detail is that otherwise without referring to each year's

papers it would not be possible to ascertain what changes had taken place in any particular holding. I would suggest that every fifth year a juma bundee be submitted in full detail for each holding, and that at the end of this statement blank leaves be left for entering all changes which may take place until the next detailed juma-bundee is prepared. Thus a reference to one paper would shew all that was necessary to know regarding each estate. By prescribing these detailed juma-bundees for the several villages of the district in alternate years there would be a great saving of labour.

5. One or two other minor improvements suggested themselves to me at the time of examining the "Dharwais'" papers. In the day-books kept by them totals are duly entered, but the totals of one day are not carried on or incorporated with the next. I always insisted upon this in the Jullundur Division, as it renders any subsequent fraudulent alteration of totals much more difficult. I observe that a separate ledger was kept for cash paid on account of canal clearances: it would be better to enter such items at the end of the ledger which is kept up for cash payments of revenue. When the day-books and the ledgers are closed, it would be well if every page were sealed and signed by the Patwari and Canoongoe, but this should be done when the Canoongoe passes through the village on a tour of inspection The "Dharwai" should not be harrassed by being summoned to the Tehseel.

6. Before concluding my remarks as to these papers, I may observe that, although in many respects better than those kept up in some portions of the Punjab, the returns of agricultural produce do not appear to be at all more reliable than they are elsewhere, and I have come to the conclusion that it is hopeless to expect that the people will ever allow the Government to obtain truthful returns regarding such matters.

7. It only remains for me to touch upon a few points in the letter of His Honor the Lieutenant Governor which call for notice, and first I would request you to convey to Captain Minchin the acknowledgments of His Honor the Lieutenant Governor for his zealous and successful exertions; and to His Honor's acknowledgments, I would beg to add my own; as I have now satisfied myself that his labours have been attended with satisfactory results. I request also that Tehseeldar Chimmun Mull may be informed that his labours have met with my approval.

8. As soon as Captain Minchin joins the Bunnoo district, I shall be glad if he is able to introduce this system there also, with such modifications

as local circumstances may suggest.

9. His Honor the Lieutenant Governor approves, you will observe, your proposal to increase the pay of Patwaris, and also of my proposal to depute the most intelligent Patwaris to take part in the Settlement operations now being carried on under the orders of Mr. Prinsep, Settlement Commissioner. If the funds you have in hand and the surplus funds you anticipate, will admit of your giving simultaneous effect to both proposals without entailing additional expense either to the people or to the State I request this may be done. If on the other hand you find that the expense of deputing these Patwaris to Mr. Prinsep will absorb your entire savings, the permanent increase to the several grades of Patwaris might be held in abeyance until those sent to the Settlement Commissioner return to the district; and the Settlement Commissioner might be requested to furnish each Patwari with a certificate, so as to help the District officer in coming to a determination as to the grade in which the Patwari should be placed.

From Lieutenant Colonel E. Lake, Financial Commissioner Punjab, to E. A. Prinsep Esquire, Settlement Commissioner Punjab, No. 295 *dated* 22*nd January* 1866.

Under instructions of His Honor the Lieutenant-Governor, I have the honor to forward for your perusal the correspondence in original marginally noted, regarding the agency employed by Captain Minchin, in the Derah Ghazee Khan district, for keeping village accounts; and I have to request that you will keep in mind the wish of His Honor the Lieutenant Governor that arrangements more or less analogous should be adopted in the districts in which your operations are now being carried on.

Proceeding	18th July	1863.	Nos. 141.
,,	28th November	1863.	Nos. 42-3.
,,	13th February	1864.	Nos. 44-5.
,,	2nd December	1865.	Nos. 25-27.
,,	27th January	1866,	Nos. 12-13.

2. I beg further that, in communication with the Commissioner of the Derajat, you will make arrangements for training in settlement work some of the most intelligent Patwaris of the Derah Ghazee Khan district, and if the arrangement proves satisfactory it can be extended to other frontier districts.

From E. A. Prinsep Esquire, Settlement Commissioner Punjab, to Lieutenant Colonel E. Lake, Financial Commissioner Punjab, No. 252 *dated* 24*th April* 1866.

After perusal and making some notes of the system described, I return the original correspondence received with your No. 295 dated 22nd January, on the subject of an experiment now being tried in the Derajat Division to improve the Patwari agency.

2. For some time past I have been favorable to this scheme, suggested by His Honor the Lieutenant-Governor and carried out with partial success so far by Captain Minchin. It appears to me to be likely to work well, to be more acceptable to the people, and to give greater guarantee for accuracy being obtained in the yearly papers.

3. I will certainly try the experiment in the Kangra district. Mr. Lyall also believes it is the only system that will work with any real effect there.

4. In Lahore the entire arrangement regarding Patwaris appears to me to call for early reform : their jurisdictions are in a confused state, the circles are not compact but very straggling, there are too many villages under the charge of one man ;—in fact, it would appear that they have the upper agency as described in Captain Minchin's report, and all that is now needed is to revive the old Dharwai, who certainly did prevail in these parts. But I must satisfy myself first that both the Deputy Commissioner and Mr. Saunders ars not opposed to the plan, and if they are willing I see no objection to make the trial at Lahore.

5. We shall then have the results of working in two more districts one essentially a mountain district, the other a district of the plains. But I am altogether opposed to making any commencement till the *entire measurements of Lahore have been completed by the existing agency*, who alone have the local knowledge to which alone we look for accuracy. A year hence I will take up the matter.

6. I have addressed the Commissioner of the Derajat in regard to the suggestion contained in your para. 2. It rests with him to send the Patwaris. If any are sent over no pains shall be spared to train them thoroughly; but I learn the Patwaris are quite averse to coming, owing to the great expense they will be put to.

No. XXX.—PAY OF VILLAGE CHOWKIDARS AND PATWARIS.

From H. E. Perkins Esquire, Deputy Commissioner Hoshiarpore, to T. D. Forsyth Esquire, C. B., Commissioner and Superintendent Jullunder Division, No. 463, *dated* 5*th December* 1868.

The theory that the Patwari and Chowkidar are village servants is one that in practice it is very difficult to work, and in respect to payment for their services it is an universal complaint in the district that the Lumberdars refrain from paying them, especially the watchmen, often for a year or 18 months at a time. The old law of summary suits, as also that revived in Financial Commissioner's Book Circular 46 of 1860, para. 7, clause 2, acknowledged this danger, by making the process of recovering such dues much more simple and expeditious than by the regular suit. But summary suits are now done away with by law, at least as regards any variety of procedure, and the Chowkidar is left to the mercy of the landholder, or else has to incur his enmity, and a certainty of dismissal from office on some trumped up story, if he venture to sue for his own. He has not the resource which other servants have of giving bad service till his wages be paid, for the police insist on his giving good work—and no one insists on his getting good pay.

2. Successive Police Officers have complained to me of the injustice so caused to the broken hearted Chowkidars. Considering that they are the servants of the State as well as of the village, I think the State is bound to give them some better protection than is given to other servants. Repeated orders have forbidden Tahsildars to realize the pay of Chowkidars and place it in deposit, and, I see no way of compelling Lumberdars to do their duty towards these wretched men, who in times of scarcity like the present are much to be pitied, than by announcing that Government will view with equal displeasure an evasion on the part of the village to pay its Watchman or Patwari, as to pay its revenue, and that any Lumberdar failing to pay these dues regularly will be liable to sequestration of his pachotra, as provided in cases of default to pay revenue, by orders contained in Financial Commissioner's Book Circular No. 16 of 1862.

From T. D. Forsyth Esquire, C. B. Commissioner and Superintendent Jullu Division, to H. E. Perkins Esquire, Deputy Commissioner Hoshiarpore, *No.* 524, *dated 3rd March* 1869.

Your No. 463, dated 3rd December 1868, regarding pay of Chowki and Patwaris by Lumberdars.

I would refer you to my remarks on the Police Report of your dis for the past year, and to state that, a copy of your letter above quoted been sent to the Inspector General of Police.

From T. D. Forsyth Esquire, C. B., Commissioner and Superintendent Jull Division, to Major J. C. P. Baillie, Deputy Inspector General of Police, Lahore Circle, No. 525, *dated 3rd March* 1869.

My No. 448, dated 22nd February 1869, regarding Hoshiarpore Po Report 1868.

In continuation of my letter above quoted, with which my remark the Hoshiarpore Police Report were forwarded, I have the hono forward the accompanying copy of Deputy Commissioner Hoshiarp letter No. 463 dated 3rd December 1868, on the subject of the paymen service to Chowkidars and Patwaris by Lumberdars.

From H. E. Perkins Esquire, Deputy Commissioner Hoshiarpore, to T Forsyth Esquire, C. B., Commissioner and Superintendent Jullunder Divisi *No.* 283, *dated* 1*st May* 1869.

By my No. 463, dated 5th December, I pointed out that the vil police in this district are very irregularly paid, and in forwarding the An Police Report I drew attention to the matter.

2. From the enclosed reply of your office to a fresh notice on my I learn that my letter has been sent to the Inspector General of Po But I would respectfully beg leave to point out, that the orders I authorizing me to fine the defaulting Lumberdars must come fro

Revenue Department, and not from the Police, and I hope you will either send the necessary orders yourself or refer the question to the Financial Commissioner, as it is a very important one, and presses for decision.

From Major E. Paske, Officiating Commissioner and Superintendent Jullunder Division, to H. E. Perkins Esquire, Deputy Commissioner Hoshiarpore, *No.* 1133, *dated 7th May* 1869.

Your No. 283, dated 1st current, regarding Village Chowkidars.

I quite agree with you in opinion that the Chowkidari system is an anomaly. The Chowkidar has to serve two masters, whose interests are too frequently antagonistic, he is ill paid and paid irregularly; his position should be improved. But the defects in the system prevail not in one district only, but almost throughout the Province, and cannot be remedied I opine but through legislative enactment. I will forward the correspondence to the Financial Commissioner for such action as he may desire to take in the matter.

2. Still you might do much by warning Lumberdars that you will view with displeasure the conduct of those in whose village you find that the Patwari or the Chowkidar is irregularly paid, and where these village servants are forced to resort to the Courts to recover their just dues.

From Major E. Paske, Officiating Commissioner and Superintendent Jullunder Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner, *No.* 132, *dated 7th May* 1869.

Has the honor to forward for perusal, and such action as the Financial Commissioner may desire to take in the matter, copy of Deputy Commissioner Hoshiarpore's No. 283 dated 1st current, and this office reply of to-day's date, No. 1133, together with the previous correspondence alluded to therein, in original, on the subject of Village Patwaris and Chowkidars being ill and irregularly paid.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, *T. H. Thornton Esquire, Secretary to Government Punjab, No.* 414, *dated* 19*th May* 1869.

Commissioner Jullunder's No. 132, dated 7th May 1869, with enclosures.

I am directed to submit the correspondence marginally noted, relati to the delay on the part of Lumberdars in pay Village Chowkidars their salaries. These pap relate to the Hoshiarpore district, but I am to rem that throughout the Punjab the difficulty here brought forward is fou to exist.

2. The Officiating Financial Commissioner would recommend, in co currence with the proposition of Mr. Perkins, that where payment is n made to the Chowkidars in accordance with the conditions entered in t Settlement records, or where there are no such conditions, up to the dat first Government instalment of each harvest, the Deputy Commissioners informed that they have power to attach and estreat the pachotra of t Lumberdars by way of fine, and in instances of repeated negligence, dismiss them from office.

3. The principle on which this suggestion is made is clear. The p of the Chowkidar is a deduction, to a certain extent, from the Governm juma. In making this deduction the implied condition is, that the Lumb dars shall collect the amount assigned for the pay of the Chowkidars wi the same diligence that they collect the Government revenue, and th pachotra is as much wages for one collection as the other. If th Lumberdar neglects his duty in this respect, the District Officer, in hi executive capacity, would seem to have power to punish him in the wa indicated. This principle has been laid down in para. 8 of Financial Boa Circular 16 of 1862, regarding the collection of the Government revenue, a stated by Mr. Perkins.

4. The method of ascertaining whether the Chowkidars have been pai seems easy to devise. Let all Lumberdars be required to bring with thei first instalment of revenue, each harvest, the receipt of their Chowkidars fo wages up to the date of that instalment, or up to such date as may be prescribed in the Settlement records. Tahsildars could prepare a registe shewing the dates on which payments are to be made according to th Settlement records, and they should be required to get and submit all th Chowkidars' receipts; any Lumberdar failing to bring a receipt should be

reported to the Deputy Commissioner, who would at once issue an order for the confiscation of the pachotra or a portion of it. But the great object would be to get receipts for the term commencing with the first revenue instalment of the last crop and ending with the first instalment of the present harvest.

From T. H. Thornton Esquire, Secretary to Government Punjab, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 724, *dated* 25*th May* 1869.

I have laid before the Hon'ble the Lieutenant Governor your letter No. 414, dated 19th instant, and its original enclosures, herewith returned, regarding the delay on the part of Lumberdars in paying the salaries of Village Watchmen; and communicating the Officiating Financial Commissioner's recommendation that where payment is not made to the Chowkidars in accordance with the conditions of the Settlement record, Deputy Commissioners be empowered to attach and estreat the Lumberdar's *pachotra* by way of fine, and in instances of repeated negligence to dismiss them from office.

2. In reply, I am directed to annex, for the Officiating Financial Commissioner's information, copy of a Minute on the subject recorded by the Lieutenant Governor, from which it will be seen that His Honor is not prepared to sanction the Officiating Financial Commissioner's recommendation.

Minute by the Hon'ble the Lieutenant Governor Punjab, in the Revenue Department, dated 22*nd May* 1869.

I am myself altogether opposed to this kind of interference. It is no doubt sad and vexatious to see a useful and industrious class of functionaries inadequately paid. But in an administrative point of view I believe it to be quite hopeless for Government to expect that it can turn Village Chowkidars

to any useful account, apart from the principal representatives of the villa
of which they are or ought to be the servants.

There was, I believe, no point that struck me more on first joining t
Panjab, than the entire bouleversement which had been effected in the Jall
dhur Doâb during 3 years, in the status and character of the Village Chow
dar, as compared with that then existing in the North-Western Provin
and I regarded the change with dismay. In the latter, or such parts of
North-Western Provinces as I had been acquainted with, the Vill
Chowkidars belonged almost always to the thriving classes, they receiv
nominally only about 1 rupee per mensem, and were practically depend
for their livelihood on the good will of their villagers. These men w
cognizant of everything that went on, knew every bad character for 10 mi
around their villages, and from their immense intelligence, activity, a
entire subordination to the heads of their village, were quite invaluable t
Magistrate who knew how to make use of them, and proved themselves, w
rare exceptions, detectives of wonderful aptitude. Here, on the contrar
I found a class of Chowkidars appointed on 3 rupees per mensem, who w
wholly antagonistic to the villagers, and regarded by them as spies on th
conduct. They knew nothing—and in cases coming before me in Sessi
or appeal, I soon discovered it to be quite hopeless to get any assista
from this class. In Jallundhur I found it to be the practice for t
Tahsîldâr to collect the whole of the Chowkidar's dues, and to distribute t
amount himself—and all bond between the people and their Chowkidars w
entirely destroyed.

The present proposal falls vastly short of this—but still it milita
against what I consider to be, in the present state of Upper India, the v
basis of any really efficient village police—viz: that the whole responsibili
for the police and conservancy of his village shall rest with the villa
representative—and the Chowkidar be essentially and entirely his servant a
instrument. When he can be proved to have ill treated him, and th
Chowkidar himself complains, it will no doubt be necessary in many cases t
afford the latter redress. But I would never volunteer interference—and o
the contrary would use efforts to make the Chowkidar feel himself entirel
dependent for his well-being on the good will of his villagers and thei
representative.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Jullunder Division, No. 3844, *dated* 25*th June* 1869.

Forwards copies of the above for information and communication to Deputy Commissioner Hoshiarpore, in reply to No. 132 dated 7th ultimo.

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No. XXXI.—REGISTRATION OF DEATHS BY PATWARIS.

Abstract of Replies to Circular Memo. No. 3661 *dated* 31*st July* 1867, *regarding the employment of Patwaris as Registrars of Deaths.*

Commissioner Delhi, No. 68 dated 6th April 1868.

The Deputy Commissioner Goorgaon (No. 99 dated 31st March 1868), forwards a statement, showing the results of the registration by the Patwaris and by the Police agency. The Commissioner remarks that the difference in the *totals* recorded by each is not great, but the difference in *detail* is so considerable as to render it doubtful whether the information collected is of any value; he observes that the importance of scrutiny and check of the Patwari's Registers had been lost sight of, but doubts whether such scrutiny would have resulted in anything but profitless trouble. He excuses Patwaris for delay in submitting returns regularly, their time having been much taken up in census work.

Commissioner Umballa, No. 46 dated 19th March 1868.

The Commissioner forwards a copy of Deputy Commissioner Loodiana No. 82 dated 7th March 1868, who reports that the measure has been tried in his district, and the Patwaris' returns have generally corresponded pretty nearly with those of Chowkidars; in some villages, the numbers recorded in the returns have been exactly the same; in others there i ve been discrepancies; he thinks the Chowkidars' returns are generally corr The Commissioner observes that employing Patwaris as Registrars of Dea causes them much extra work, and would not recommend the continuan of the plan, or its extension to other districts.

Commissioner Amritsur, No. 92 dated 30th March 1868.

The Commissioner submits a report by the Deputy Commissioner Sealkote, (No. 109 dated 26th March 1868), says that the way in which the Death Returns been rendered by the Patwaris is most unsa... tory, and thinks they are not very reliable; this he attributes partl neglect of Tahsildars, and partly to Patwaris having been much en in census work, and in preparing their annual returns &c., though he not consider this a sufficient excuse. He hopes to be able to repo favorably next year, and has asked the settlement department to in when Patwaris send in incorrect or carelessly prepared returns,

Commissioner Rawul Pindee, No. 48 dated 3rd March 1868.

The Commissioner forwards a report by the Deputy Commissioner of Shahpoor No. 185 dated 4th March 1868, who observes that the making over the duty of reporting deaths to Village Dharwais has been found unsatisfactory, and has caused disputes as to who is the Village' Dharwai," and led to quarrels and disagreements. The Patwaris have too much work already to allow of their doing this correctly. The Commissioner recommends that Chowkidars be supplied with a small book for the purpose of entering all deaths as they occur, as at present they often forget the occurrence of deaths when making their reports.

Commissioner Rawul Pindee, No. 71 dated 6th April 1868.

The Commissioner is of opinion that the preparation of Death Returns by Dharwais in the Shahpoor district, is not desirable; the experiment has been fairly tried, and has not succeeded, owing to the frequent absence of the Dharwais from their villages, to the difficulty of discovering who are the Dharwais, and to their inefficiency. The Deputy Commissioner of Shahpoor will be desired for the present to discontinue employing Dharwais on this work.

Commissioner Mooltan, No. 38 dated 3rd March 1868.

The Commissioner submits a copy of the Deputy Commissioner's Montgomery's report (No. 39 dated 13th February 1868), who says that the working of the measure has not been successful. The Patwaris have too much work, and are quite unable to prepare the returns and submit them with the regularity and correctness desirable; and now that the revised settlement is to be made, they will have even less time than before. Tahsildars have therefore been directed to have the Death Returns prepared by the Dharwais and submitted by the Lumberdars of the villages.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton, Esquire, Secretary to Government Punjab, No. 283 *dated* 10*th April* 1869.

With reference to your letter No. 213 dated 13th February 1867, directing that, in selected localities, the experiment of registering deaths through the agency of Patwaris should be tried, I am directed to state that after obtaining the opinions of Commissioners, instructions were issued on the subject in this office Circular No. 54C—3661 of 31st July 1867.

2. Commissioners and Deputy Commissioners were directed to report on the working of the system, and an abstract of their replies is herewith forwarded. It will be seen that the general opinion is not favorable to the measure, on the ground chiefly of the Patwaris being too much occupied with other duties to be able to attend carefully to registration of deaths. The Patwaris' returns have not generally been found a very effectual check on the Chowkidars' returns, and in the Loodiana district the Deputy Commissioner was of opinion that the Chowkidars' returns were generally correct.

3. Mr. Egerton, while admitting that the present experiment had not been successful, recorded his opinion that complete statistics of Births, Deaths and Marriages in selected localities were very desirable; and suggested that the Sanitary Commissioner might be consulted as to the forms to be used. Correct statistics for a limited number of places would be of more value than more extensive returns of doubtful reliability.

4. The Financial Commissioner would select towns where Municipal Committees have been formed, and where the cost of registration would be met from Municipal Funds. But if the registration be effected in other places, special arrangements would have to be made regarding remuneration of Registrars.

The results of a careful system of registration, together with the results of the recent census, would go far to show the rates of increase and decrease of population in the province.

From T. H. Thornton, Esquire, Secretary to Government Punjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 1713 *dated 3rd June* 1869.

With reference to your letter No. 283 dated 10th April, regarding the registration of deaths by the agency of Patwaris, I am directed to annex for the Financial Commissioner's information copy of a letter from the Sanitary Commissioner on the subject, No. 318 dated 27th ultimo; and to authorize the Financial Commissioner to order the discontinuance of the plan of making Patwaris check the Mortuary Returns.

From A. C. C. DeRenzy, Esquire, Sanitary Commissioner Punjab, to T. [illegible] *Thornton, Esquire, Secretary to Government Punjab, No.* 318 *dated* 27*th May* 1869.

With reference to your No. 1323, and enclosure No. 283 of 10th Ap[illegible] from the Secretary to the Financial Commissioner, I have the hono[illegible] state that I consider it inexpedient to make any change in the plan alre[illegible] adopted for the gradual extension of registration of births and deaths.

2. I have not proposed, nor do I consider it expedient at present[illegible] attempt, the registration of Marriages.

3. Agreeably to para. 11 of your No. 3216 of 20th November 18[illegible] I proposed the draft of registration rules approved of by His Honor for t[illegible] acceptance of the Municipal Committees of Delhi, Umritsur, Lahore [illegible] Mooltan, stating at the same time, as authorized by para. 4 of your [illegible] 3485, that if the Municipal Committees thought proper to adopt the m[illegible] stringent rules which I considered necessary His Honor would be prep[illegible] to consider favorably proposals to that effect.

4. The Municipal Committees of Delhi and Mooltan have adop[illegible] rules of sufficient stringency, and the subject is still under the considera[illegible] of the Municipal Committees of Lahore and Umritsur.

5. I would now only request permission to propose the rules for [illegible] acceptance of the Municipal Committees of the four Hill Sanitaria, [illegible] Simla, Dhurmsala, Dalhousie and Murree.

6. When a good system of registration has been established in [illegible] Municipal towns, it will be quite time enough to take measures for the m[illegible] effectual registration of the births and deaths of smaller places.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Pu[illegible] *to the Commissioners Umritsur, Umballa, Mooltan, Jullundhur, Rawul Pindee and Delhi, Circular Memo. No.* 3592 *dated* 17*th June* 1869.

It is requested that the registration of deaths by Patwaris enjoined [illegible] this office No. 3661 dated 31st July 1867, may be discontinued, in accorda[illegible] with the annexed order of Government.

XXXII.—YEAR TO BE ADOPTED IN THE PREPARATION OF PATWARIS' ANNUAL PAPERS AND ACCOUNTS.

From D. F. McLeod, Esquire, Financial Commissioner Punjab, to G. C. Barnes, Esquire, Commissioner and Superintendent Cis-Sutlej States, No. 3107, *dated* 10*th November* 1854.

I have the honor to acknowledge the receipt of your letter No. 360, dated 26th ultimo, calling for a reply to your previous letter No. 65 dated 1st March 1854, regarding the year to be adopted in preparing the annual papers and accounts prescribed for village Patwaris, a subject which I have felt much delicacy and diffidence in disposing of, as my present opinions in regard to it, differ, as correctly stated to you by Mr. Melvill from those avowed by my predecessor, and suggested by him to Commissioners for their consideration and adoption.

2. This question was first discussed by me, when Commissioner of the Trans-Sutlej Division, with the Settlement officers, long before the present correspondence arose. And the conclusion then come to, was, that it was quite indispensable the Kharrif should precede the Rabbi in the preparation of the papers in question, an arrangement which Mr. Pearson, as Settlement officer, had previously formally ordered of his own authority, both on grounds inherent in the matter itself, and because this arrangement is the one in force throughout the whole of the rest of Upper Hindoostan, where none of the eminent Revenue authorities who have from time to time been connected with the administration have ever attempted to deviate from it; although in all the Government accounts, the Rabbi collections have long been made to precede the Kharrif.

3. The correspondence which passed upon that occasion, was called for by the late Board, who ultimately formally sanctioned the arrangement above stated, a fact which was not known to my predecessor at the time when he first directed that the order of harvest should be reversed in the Patwaris' papers, though ultimately; on its being brought to his knowledge, he did not consider that sufficient grounds had been shown to induce him to modify the opinion which he had previously formed.

4. In the course of the correspondence above referred to, M Temple, who was then Settlement officer of Jallandar; designated t precedence of the Kharrif harvest, as the " natural order of the seas Although myself fully of opinion, even at that time, that it was the one which we ought to adhere, it did not then appear to me that there w any valid ground for so designating it, but I have since been led enti to accede to the correctness of the expression; from a consideration the fact, that the lands for both classes of crops alike, must be ordina broken up, before the setting in of the rains, so that any one purpo to cultivate a Rabbi crop; will desire to have the land placed at his di posal from May or June at the latest.

5. In the 7th para. of your letter of the 26th November 1853; y expressed the opinion, that even with tenants-at-will, it will not be di cult to make engagements to conform with the Sambat order of harve But the above consideration convinces me, that this expectation could n be realized, and the practice of all Central and Upper India, at all eve is opposed to it. Cases do occur no doubt occasionally, where land transferred only from the Rabbi harvest, but I do not think I am in er in stating, that this takes place only where the land has already b under cultivation; and special circumstances have rendered the trans at an unusual period necessary. Where lands have to be newly brok up, and where their area is liable to be affected by the action of rive engagements must, in a manner from necessity, commence with the Khar harvests, and I feel convinced, that whatever arrangements we may ad in the matter of accounts, the usage of agriculturists will continue to as heretofore, to make their engagements for the year, before the setti in of the rains.

6. I may here observe, that the use of the terms Sambat and Fa appears to me to have unnecessarily obscured this question. For as th agriculturist calculates his year with reference to the period of prepari the land and sowing the seed, while the Government calculates its R venue year with reference to the period of making the collections, regard for the purposes of each, the Sambat year of the former, as identi cal with the Fasli of the latter, the first because its commencement imme diately precedes the preparations for the Kharrif crop, the last, becaus its commencement precedes the collections of that harvest.

7. I believe too, in so far as my own recollection serves me, and the impression is confirmed by such enquiries as I have been able to make here, that in our older provinces, the practice conforms with this view, and that the Rabbi crop, which is now being sown, will there be universally designated, and entered in the Patwaris' books, as appertaining to the Sambat year 1911, *i. e.*, that to which the preceding Kharrif belongs, and not to the year 1912, which will commence from April and May 1855, and indeed, as some of the earlier Rabbi crops are in some parts of those Provinces cut in the end of February and in all March it would seem that any other mode of designating it must there be anomalous.

8. In the Punjab, it certainly does appear to be otherwise, and the present Rabbi crops will, I believe, be generally regarded as belonging to the Sambat year 1912; within which they will probably all ripen—but I think it probable; that if this be the fact, it may be the result merely of the system introduced by ourselves, though I am not certain whether this is the case, nor do I consider the mere fact of designation as very material to the real question, which is simply whether the Kharrif shall precede the Rabbi in the village records, independently of the year to which each may appertain. I may mention, however, that Mr. Blyth, Extra Assistant, asserts the usage of the zemindars amongst themselves as respects the Sambat year to which they assign the Rabbi; to be identical with that which I have assumed to prevail in our North Western Provinces.

9. Mr. Melvill has pointed out, that where ek-fasli land may be sown occasionally with Kharrif crops, and occasionally with Rabbi, the Kharrif, on each occasion, when it is substituted for the other, will immediately succeed the Rabbi, while the latter can never immediately succeed the Kharrif, the result of which will be, if the Rabbi be first entered in the village accounts; that in the papers of one year, the land will be shewn as bearing two crops, while in another, it will appear as bearing none. You have in your letter of the 1st March 1854, expressed your doubt of this fact, but I think a little enquiry will satisfy you of its correctness.

10. In that letter, and in your present one; you have adverted to the fact, that in Kangra, you yourself adopted the arrangement, which you are still disposed to advocate. I have gone over some of the Patwaris' papers of that district, with some of the most intelligent of the native officers, who there

served under you, and they fully admit, that if transfers were still frequent inconvenience must result from the arrangement, and the reason that none has been hitherto experienced is, that such is not the case, and that from the character of the people; beyond the taking of the Patwaris' evidence, which is founded on these papers, but little use is at any time made of them. The papers in question are, moreover, so simple in form, that the harvests are not in fact discriminated in them, so that I do not consider the experiment so far as it has hitherto gone in that district; as a sufficiently conclusive guide to direct us in devising arrangements for other parts.

11. In your letter of the 26th November 1853, you remark on the convenience of making the agricultural, the commercial, and the official year correspond. I have already stated that I consider the former as already corresponding with the two latter, quoad the period of cultivation of the two respective harvests—which as respects the commercial and banking transactions of the people, is I think, the most important point. It must be admitted that it differs from the latter quoad the period of collection—and I fully concede that if we could induce the agriculturists to alter the order of their own engagements, it would be very desirable, thus to secure uniformity—but as I have observed above, I consider this to be out of the question—and it appears to me, I confess, to be of much greater importance, that the village records be made to correspond with the order of the arrangements actually made in the village; than that they should agree with the accounts of Government, with which they appear to me to have no necessary connection.

12. The objections which have been urged to making the Rabbi the first harvest to be entered in the Putwaris' papers, may, I believe, be summarised as follows;—

First. That when changes of incumbency of cultivators occur, as they usually do, from the Kharrif, separate entries or supplementary papers must, in that case, be prepared in order to represent these.

Secondly. That where lands are subject to the action of rivers, the jamabundees of these, to be at all permanent, or in fact of any practical value, must be prepared from the Kharrif.

Thirdly. That ek-fasli lands adopted for the production of either class of crop, at the option of the cultivator, would, under the proposed arrange-

ment, be exhibited in some years as producing two crops, in others none at all.

Fourthly. That the area of the village must be twice in the year examined by the Patwari, for the correct preparation of his "Kilan Khasrah" whereas a single examination suffices, if made at the close of the Rabbi, which is the case when he has to prepare his papers up to that period only.

Fifthly. That the proposed arrangement, if adopted, would differ from that prevailing throughout the North Western Provinces, where that previously existing has been adhered to, although the same reason for an alteration of it, which has been here urged, *viz.* conformity with the accounts of Government, might be urged with equal force as in the Punjab.

Sixthly. That as all village engagements as a general rule, are made to date from the Kharrif, and it appears from the necessity of the case that this practice must always continue, the village papers would no longer be an exact representation of those engagements, as actually made.

13. All of these objections appear to me to be more or less valid. Others might perhaps be urged, and it is my belief, that in the progress of preparing the papers, more especially after changes of incumbency shall have become, as I think they are likely to do, more frequent—further anomalies will appear. But those which I have stated, appear to me to more than counterbalance the single argument, which, in so far as I am aware, has been adduced in favor of the change, *viz.* that it will bring the village records into correspondence with the Government accounts.

14. I may add, further, that Mr. Davies, Settlement Officer of the Bari Doab, and Mr. Blyth, Extra Assistant under him; to whose opinions in favour of the changes I believe Mr. Edmonstone attached great weight, have subsequently altered that opinion, and written to me to say that, on further enquiry, they find its adoption would involve many inconveniences.

15. While therefore, I feel great delicacy and hesitation, in issuing any definitive orders, opposed to the opinions of my predecessor, corroborated as those have been by the expressed sentiments of yourself and

Mr. Thornton, in favour of the change, yet you will readily understand from the foregoing; that I am altogether indisposed to constrain Mr. Melvill; in opposition to his own strong conviction, to adopt the change which has been advocated—and I request accordingly, that you will authorize him to have his papers prepared from the Kharrif as heretofore.

16. At the same time, I should be glad to see a fair trial given to the other system, advocated as it has been by so many able officers, and accordingly should you find any others of your Deputy Commissioners in favour of it or prepared to give it trial, with some confidence of its success, and you yourself desire this, you are authorized, as indeed, you have already been, to issue instructions accordingly.

17. You will then be enabled at the end of a year's trial, to favour me with a definitive opinion founded upon actual experience as to which mode should be preferred, and this is in my opinion of sufficient importance, fully to counterbalance any inconvenience, which may intermediately result, from want of uniformity between the practice of different districts.

From D. F. McLeod, Esquire, Financial Commissioner, Punjab, to M. P. Edgeworth, Esquire, Commissioner and Superintendent Trans Sutlej Division, No. 3440, *dated* 27*th December* 1854.

I have the honor to acknowledge the receipt of your letter No. 156 dated 8th current, intimating that your opinion in respect to the inexpediency of adopting the Sambat year, in the preparation of the Patwaris' papers, has been considerably altered, and that you now anticipate no material inconvenience from the adoption of that arrangement.

2. If any material advantage could be shown, as likely to result from such adoption, I should be disposed to waive my objections to it—but I have heard none advanced: save the desirableness of having the period embraced in those papers to correspond with that adopted in the engagements with Government, an advantage which appears to me to be entirely theoretical, and of no practical value, so long as the en-

gagements entered into by zemindars and cultivators amongst themselves do not conform to that period.

3. In your 2nd para. you state, that from such enquiries as you had made, the above arrangement appears to be prevalent in the Hill Pergannahs of Hushiarpur. If by this you intend that new leases are there ordinarily given to cultivators from the Rabbi crop, such is contrary to my own experience of those parts, and I think the point deserving of further enquiry, as I doubt whether the introduction of such a practice is possible, and it is certainly opposed to that of every part with which I am acquainted.

4. You adduce likewise the opinion of Mr. Barnes, and I accordingly annex, for your consideration and for record, a copy of a letter No. 3107, dated 10th ultimo, addressed by me to him on the subject, and would here repeat, what I have there stated, that much of the variety of the opinions which have been expressed in regard to this question, have in my opinion resulted from the use of the term "Sambat" year, which I believe conveys a very different meaning to a cultivator, from that which a Government official understands by it. In fact, I consider the Sambat year of the former and the Fasli of the latter to be identical; as regards the harvests included therein.

5. I may add that the Chief Commissioner recently formed in his camp a Committee of Natives to consider this subject, and they unanimously expressed as their opinion that the Kharrif should precede the Rabbi in the village papers, and as I anticipate a necessity for reverting hereafter to this arrangement: if a contrary one should now be adopted—I request that no change may be made in the system heretofore in use, until the issue of further orders to that effect.

From T. D. Forsyth, Esquire, C. B., Commissioner and Superintendent, Jullandhur Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, No. 66 – 566, *dated* 6*th March* 1869.

In reply to the 3rd para of your Circular 86, dated 23rd December last, I have the honor to give the following reports of the Deputy Com-

missioners of this Division regarding the date on which the agricultu year should begin.

Jallandar. "I have the honor to report that the agricultural year i this district should be deemed to begin on 1st September. Colonel La fixed this date in an order dated 13th August 1857."

Hushiarpur. "I have the honor to state that the beginning of J fell, in 1868, on the 12th May: and it fell on this date 5 years out of sev falling on the 13th May the other two years, and allowing for the Hin system of leap years, I find that the most suitable date to select for permanent commencement of the agricultural year would be the 1 May."

Kangra. "Has the honor to inform him that in this distric agricultural year is supposed to commence on the first of the month C which this year will fall on 12th March. The Deputy Commissione of opinion that for the purposes of the Punjab Tenancy Act the agricultu year might be fixed to commence on the 1st April, so as to correspond w the financial year. Regrets that by an oversight the report called for the above point has been delayed."

2. I beg to refer you to a very lengthy correspondence which pas between Messrs. Melvill, Barnes, Edgeworth and McLeod on this subjec which ended with the expression of the present Lieutenant Governor, th Mr. McLeod's opinion, in his No. 3440, dated 27th December 1854 to M Edgeworth, and his No. 3107, dated 10th November 1854, to Mr. Barnes

3. Since that time no change of system appears to have been ordere with the exception of Colonel Lake's order with regard to Jallanda quoted by Major Hall.

4. If one date be fixed authoritatively for all districts, I shoul advocate the sequence of Kharrif Rabbi in preference to that of Rab Kharrif, and to make the agricultural year commence with the sowing for the Kharrif, the actual date for which would vary according to th climate in different parts of the Punjab.

From J. B. Lyall, Esquire, Settlement Officer Kangra, to E. A. Prinsep, Esquire, Settlement Commissioner, Punjab, No. 29, *dated 26th April* 1869.

Hitherto the Patwaris in this district have done very little in the way of giving in annual papers. Munshee Ameen Chund, Extra Assistant, is about to take the subject in hand, and attempt to secure good returns for the future. But as a preliminary I wish to know whether there will be any objection to making it the rule in Kangra that the Patwaris' annual papers shall be made up for the Bikramajit Sambat year, not for the San Fasli year. The former nearly corresponds with the financial year; that is, it ends some time in March. Even in villages in which alluvion and diluvion occurs no difficulty would occur, the decrease the Tahsildars remit in anticipation of sanction, the increase they could collect with the Rabbi kist of the next year's demand: this would in no way puzzle the zemindars, as the 16 annas of the rupee of the *old* jumma would have been completed by collections for the Kharrif. In the Government accounts the change would of course make no difference. The fact is that in Kangra the zemindars have, ever since annexation (and under former Government also), *kept* their accounts according to the Bikramajit Sambat, nor have they made any difference in their practice in consequence of the Patwaris having been told since Sambat 1914 to give in annual papers according to the Fasli year. The accounts of village expenditure and of payment of land revenue are cleared up in the villages at the Kharrif kist, not at the Rabbi.

From E. A. Prinsep, Esquire, Settlement Commissioner Punjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 81 *dated 24th June* 1869.

I forward in original a letter No. 29, dated 26th April 1869, from Mr. Lyall, Settlement Officer Kangra, asking for sanction to introduce the Bikramajit year instead of the Fasli year in Kangra district for all matters bearing on the internal revenue arrangements of villages.

2. I see no objection to this, the arrangements adduced are worthy of every consideration. The Fasli year although officially recognized by us does not seem to have been attended to at all by the people. It is impossible to expect them to change their habits and modes of account, and there is room for the apprehension that if the Fasli year is still retained simply to have uniformity with the rest of the districts in the Punjab the people will not understand it, the new race of chief and under Patwaris lately introduced by Mr. Lyall, in lieu of and as an improvement on the zaildari agency, will not understand how to make the village accounts agree with the order of years kept in these yearly papers, and so a habit will be encouraged of making up *furzee* papers as so often occurs; and we have not been able as yet, even in other districts, to combat these practices.

3. For every reason then I agree with Mr. Lyall, no objection should be made to the suggestion he makes. It is a reform all in the proper direction, and in a district like Kangra where the revenue is chiefly paid from and within the Kharrif harvest there is a special reason for this.

4. I have taken the opinions of a Committee of Officers composed of Rajah Humeedoollah Khan, who is now an Extra Assistant Commissioner here at Amritsar, of Agha Kulubabid, Extra Assistant Commissioner, and Gobind Sahai, Tehseeldar of Amritsar; the two latter are revenue officials of experience, and they consider the Bikramajit year should be maintained and recognized by Government, as it is the year followed by these hill people in all their village accounts and revenue transactions.

5. I enclose a Memo of the Committee's reasons, which seem quite to corroborate all what Mr. Lyall advances.

6. A similar question is likely to come up from Huzara, where already Lieutenant Wace has found the instalments fixed by Government for the revenue are quite unsuited to the times of the year the crops ripen in that district. It would seem that in adopting the Fasli year generally, we have not sufficiently regarded local requirements of such exceptional districts as say Simla, Kangra, and Huzara.

7. I wish to know whether Financial Commissioner agrees to this.

Abstract translation of proceedings of a Committee composed of Rajah Humeed-oollah Khan and Agha Kulubabid, Extra Assistant Commissioners, and Gobind Sahai, Tehseeldar of Amritsar.

Are all in favor of the change for these reasons—

1. The main fasl in Kangra is the Kharrif, the Rabbi being light, all the crops &c., are gathered *within* the Bikramajit year, all agricultural and other accounts which are closed in the plains in Rabbi are closed in Kangra in Kharrif. Both fasls are accomplished *within* the Bikramajit year.

2. The Fasli year is a new thing in Kangra, and the zemindars' internal accounts are not regulated by it.

3. The Bikramajit year will also agree with the English year, and the period prescribed for submission of kistbandis, Patwaris' papers &c.

4. In the Fasli year one fasl is taken from one Sambat and one from another, to make up the year. This will be avoided, but the attestation of land (Girdaori) done by the Patwari should be altered. It should not be in October and November as now, but from May to July, as at this time the *real* state of the land in cultivation for both fasls will be apparent.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton, Esquire, Secretary to Government Punjab, No. 589 *dated* 22*nd July* 1869.

In submitting the accompanying letter No. 81 dated 24th ultimo from the Settlement Commissioner, with its enclosure, desiring sanction to introduce the Bikramajit year for the Fasli year in the Kangra district in all matters bearing on the internal revenue arrangements of villages, I am directed to state that the Offg. Financial Commissioner would feel obliged by His Honor the Lieutenant-Governor passing orders on the reference.

2. Mr. Melvill is unable to understand how the Bikramajit ye can be followed in agricultural affairs, because that year begins in Ch or March, when the Rabbi crop is in mid-growth. Clearly exchang of land could not then be effected, nor could tenancies be then broug to a close, unless the ground was fallow.

3. It is true that in Kangra generally the Kharrif is the principal cr whereas in most districts of the Punjab the Rabbi is the chief harve except in rich *do-fasli* lands. Only one crop is grown in the yea either a Kharrif or a Rabbi crop. If the land is to be prepared for Kharrif crop ploughing commences in March, if a Rabbi crop is i contemplation, the agriculturist begins his labors in *Asar or* June, wh the rainy season sets in; occupation of the land commences with t Bikramajit year for the Kharrif, and with the Fasli year for the Rab

4. If the Fasli year is observed the entire produce, whether Kharrif or Rabbi, is removed from the ground within the year.

5. The Offg. Financial Commissioner believes it to be the fact th engagements are entered into for cultivation in Kangra indifferently the Rabbi or Kharrif.

6. Mr. Melvill recommends that no alteration be made in th existing system, under which the village papers follow the Fasli yea The Commissioner of the Jallandar Division, in his letter No. 66 date 6th March last, regarding the commencement of the agricultural year in connection with the Punjab Tenancy Act, expressed his opinion in favor of the sequence Kharrif Rabbi as against the sequence Rabbi Kharrif and accordingly recommends that the time for sowing the Kharrif should be fixed as the beginning of the agricultural year.

7. A long correspondence occurred on this subject generally in 1853-4 and His Honor the Lieutenant-Governor expressed his views fully in a letter written by him when Financial Commissioner, No. 3107 dated 10th November 1854. The case of Kangra is referred to in that letter. The whole of that correspondence, as well as the Commissioner's letter quoted in the preceding para, is herewith forwarded for reference.

From T. H. Thornton, Esquire, Secretary to Government, Punjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, *No.* 1071, *dated 6th September* 1869.

I am desired to acknowledge your letter No. 589, dated 22nd July last, submitting a correspondence with the Settlement Commissioner (herewith returned) relative to a proposal to introduce the Bikramajit year for the Fasli in the Kangra district, in all matters bearing on the internal revenue arrangements of villages; and in reply to state that the Honorable the Lieutenant Governor does not clearly apprehend the purport of this reference.

2. His Honor believes that the Patwaris' papers give the Kharrif harvest first and the Rabbi after it (*vide* para 5 of Financial Commissioner's letter to Commissioner Jallandar Division, No. 3440, dated 27th December 1854). This is in accordance with agricultural usage in the matter of engagements, and should not be altered, nor does His Honor gather that Messrs. Lyall and Prinsep desire it altered.

3. The Lieutenant-Governor believes that much confusion has heretofore resulted from referring to the designation of year in such discussions, instead of adverting to the sequence of harvests alone. The requirements of agriculture in all Upper India virtually necessitate commencing engagements from the Kharrif, as both that harvest and the Rabbi are dependent on operations conducted just before and during the rains; hence the agricultural year commences from the vernal equinox.

4. The Government collections on account of the Kharrif commenced under the Mahomedan Government in September, and they accordingly took that as the commencement of their Fasli year; so that in point of fact the Sambat year of the agriculturists and the Fasli of the Government are for administrative purposes identical, as remarked by Sir Donald McLeod when filling the office of Financial Commissioner in the letter above quoted, to the opinion expressed in which His Honor still adheres.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Punjab, to Edward Prinsep, Esquire, Settlement Commissioner, Punjab, No. 5840, *dated* 29*th September* 1869.

' No. 3107, dated 10th November 1854, from Financial Commissioner, to Commissioner Cis-Sutlej States.
No. 3440, dated 27th December 1854, from Financial Commissioner, to Commissioner Trans-Sutlej States.
No. 589, dated 22nd July 1869, to Government Punjab.
No. 1071, dated 6th September 1869, from Ditto.

In reply to No. 81, dated 24th June 1869, forwards copy of the correspondence noted in the margin, connected with the proposal to introduce the Bikramajit year for the Fasli year in the Kangra district in all matters bearing on the internal revenue arrangement of villages, and states that as it has been ruled by His Honor the Lieutenant Governor that the Kharrif is to precede the Rabbi in village accounts, no alteration should be made in the existing practice.

From F. E. Moore Esquire, Officiating Deputy Commissioner Jallandar, to Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Jallandar Division, No. 416 *dated* 9*th October* 1869.

With reference to Financial Commissioner's Book Circular No. 13 of 1869, I have the honor to enquire if the date fixed as the commencement of the agricultural year under Sections 10 and 28 of the Tenancy Act is in any way to affect the submission of the Patwaris' annual papers; these are at present prepared on the understanding that the agricultural year begins with 1st September—See Colonel Lake's Vernacular Rubkari of 13th August 1857.

In having two distinct agricultural years will be likely to create confusion perhaps.

From Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Jallandar Division, to J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, No. 333 *dated* 20*th October* 1869.

Has the honor to forward for orders the accompanying copy of letter No. 416 dated 9th current from the Deputy Commissioner Jallandar, on the subject of the date fixed as the commencement of the agricultural year.

It seems unadvisable that there should be two distinct periods for calculating the commencement of the agricultural year, one for adjustment of rent, the other for purposes of account.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner Punjab, to Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Jallandar Division, No. 6554 *of 3rd November* 1869.

In reply to your No. 333 of 20th ultimo, I am directed to intimate that the Officiating Financial Commissioner does not consider that any inconvenience is likely to result from the date fixed for the commencement of the agricultural year for the purposes of the Punjab Tenancy Act in this office Circular No. 13—58 of 1869, differing from that by which the Patwaris' annual papers are required to be submitted.

2. For the purposes of the Tenancy Act, I am to observe, it was necessary to fix a specific date as the commencement of the agricultural year, but as regards the Patwaris' accounts it does not much matter on what date they commence so long as they provide for the proper sequence of the harvests, *viz.* Kharrif first and Rabbi afterwards.

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those cases of rent-free holdings in which M
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XXXIII.—RELIGIOUS INSTITUTIONS IN KULLU OF THE KANGRA DISTRICT.

From J. B. Lyall, Esquire, Settlement Officer, Kangra district, to Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent, Jalandar Division.

History of Kullu. Temple endowments how treated by Mr. Erskine at the Summary Settlement.

I have the honor to submit a report on the subject of lands claimed as endowment of temples or religious institutions in Tahsil Kullu. The Trans Sutlej States were annexed in March 1846, and some time in that year the Kullu Tahsil (which then included Taluqua Bangahal, now in Tahsil Kangra) was transferred to the charge of Mr. Erskine, Superintendent Simla Hill States. Mr. Erskine at once took up the work of completing the Summary Settlement and of investigating the rent-free tenures.

In his letter No. 151 dated 11th September 1847, he reported both works to the Government of India for sanction, and submitted with it three registers of rent-free holdings, *viz*: No. I, Jaghirs of relatives of chiefs of country; No. II, Lands granted for support of temples; No. III, Dharmarth or charity lands. Excepting in the case of the jaghirs, which are not concerned in the report I am making, Mr. Erskine made one recommendation serve for all the cases in each register; that is, with regard to the temple endowment lands he recommended release of all in perpetuity ..t or so long as the proceeds should be applied to support of the ter..at he for which the grant was originally given; and with regard to the ..ore land arth lands he recommended release of all for life of present ..ould make a The Government of India, in its No. 2680, dated 16th ..ntually done. briefly approved. In the misls or vernacular f.. ..f .. Erskine worded his orders as if they wer.. Commissioner's office, but it land only until regular enquiry; but ..y difficult to pass orders upon them, ..hey remained there till 1866, when Mr. Forsyth, in his Roobacar of 20th September, asked me to go through them and give an opinion in each case. The misls were returned to me, and I sent them to the Superintendents of Settlement of Kullu and Seoraj, with instructions to use every effort to identify the lands anciently released in support of the temples from lands

..ordered by ..enquiry b.. Commissioner. Dir..ons given to the Superintendents of Settlement.

Mr. Erskine calculated that an acre was equal to about 1 Bhar 10 P[illegible] of irrigated or rice land, and about 4 Bhars of unirrigated land. [illegible] few sanads were produced before Mr. Erskine in the case of [illegible] lands; and of those few very few state the area granted. Mr. Ers[illegible] however, from enquiry satisfied himself in each case that some lands [illegible]rently not in excess of those claimed had been held rent-free as endow[illegible] of the temple, and thereupon released the amount of Bhar Patha cla[illegible]

How treated by Mr. Barnes, at Regular Settlement.

2. After this the Kullu Tahsil was put back into the K[illegible] district, and then came the Regular Settlem[illegible] Mr. Barnes in 1850-51-52. Again there wa[illegible] measurement. Computators were sent round to appraise or estim[illegible] the ground the amount of the lands, Khalsa and Lakhiraj, in Bhar[illegible] Pathas; but by all accounts they rarely took the trouble to actually ap[illegible] Lakhiraj land. Mr. Barnes took the Bhar of barley (which diff[illegible] weight from that of rice and wheat) as his standard of measur[illegible] and calculated that in unirrigated lands one acre equalled 3 B[illegible] Paths, and in irrigated land something considerably less. Mr. B[illegible] standard differed from Mr. Erskine's so that the results could n[illegible] expected to agree. The areas returned by the computators own[illegible] temples &c., &c., were entered in the Furd Lakhiraj, and no fu[illegible] enquiry was made except in the case of some lands claimed by man[illegible] of temples who had failed to claim before Mr. Erskine, or pleaded [illegible] they had by mistake claimed too little. In some cases of this [illegible] after a verbal enquiry Mr. Barnes gave a parwanah releasing such [illegible] such extra lands pending regular investigation. It does not ap[illegible] Mr. Barnes was aware that Mr. Erskine had reported the K[illegible] tenures, and that the Government of India had passed or[illegible] [illegible] The areas of the maafis in the list of Lakhiraj la[illegible] Barnes' Settlement misls are sometimes more and so[illegible] [illegible]en in Mr. Erskine's registers.

[illegible]ke, then I think Officiating Commi[illegible] [illegible] the Divisi[illegible] [illegible] Major Hay, Assista[illegible] [illegible]sioner of Kullu, to make further enquiries [illegible] those cases of rent-free holdings in which M[illegible] [illegible]ven an[illegible] der releasing them till such time as a f[illegible] [illegible] be made This was the wording of all or nearly all of M[illegible] [illegible]ar orders in the Persian misls of temple maafis. I a[illegible]

inclined to think that there was some confusion at the time, and that if Colonel Lake knew of the registers which had been submitted to Government of India, he at any rate did not know that every case of temple maafi in which Mr. Erskine made any investigation was included in those registers, and has therefore been disposed of. Any how, Major Hay commenced a general reinvestigation, which was continued by Mr. Knox, Assistant Commissioner, and completed by Major Mercer, Assistant Commissioner, in 1861. In this reinvestigation the Patwaris filed returns of the areas in Bhar Path by their computation held by each temple or maafidar: these areas were generally considerably in excess of the areas by Mr. Erskine's register, and often hugely in excess. In a few cases sanads were produced which had not been produced before, and a good number of claims were made which had not been made at all before Mr. Erskine. A good many also of these Byraghis and Brahmins whose grants had been released for their lives only, by Mr. Erskine, claimed to have them treated as endowments of Thakurdwaras. These claims of the Byragis, and of the managers of temples, who had not claimed at original investigation, were generally admitted after some enquiry by all three Assistant Commissioners. With regard to the excess of holdings in other cases, Messrs. Hay or Knox very commonly recommended resumption and assessment of the excess, which they ordinarily attributed to under-estimate at original enquiry, or breaking up of waste land since, or to both. Major Mercer, except in one or two cases, did not notice the point of excess holding at all, and it appears from some orders of Major Mercer's that he was not aware till the enquiry was finished of the existence of Mr. Erskine's registers and the orders of Government therein. Major Mercer mentioned however in his forwarding letter that he had discovered towards the end of his enquiry that very much more land was held than had been originally claimed, and said that he would make a separate report on this subject, which however was not eventually done.

Reinvestigation in Revision of Kangra Settlement ordered by Mr. Forsyth, Commissioner. Directions given to the Superintendents of Settlement.

4. All the files or misls went up to the Commissioner's office, but it was clearly very difficult to pass orders upon them, and so they remained there till 1866, when Mr. Forsyth, in his Roobacar of 20th September, asked me to go through them and give an opinion in each case. The misls were returned to me, and I sent them to the Superintendents of Settlement of Kullu and Seoraj, with instructions to use every effort to identify the lands anciently released in support of the temples from lands

which might have since been acquired by the managers, by comparison area in sanads or in old jumma-bundee papers with area held, and by other means. I also ordered that in measurements all lands claimed as Lakhir should be measured with the chain, and the areas given in acres as well by computation in Bhar Pathas even in those rougher and wilder parts of the country where with respect to Khalsa lands, I had determined that mapping with plane table, and measurement with the chain would take too long and be too expensive to be advisable, and that appraisement in Bhar Path after the old fashion would be sufficient.

Lands claimed how recorded in the new Settlement papers. Result of the Superintendent's enquiries.

5. In the measurements all the cultivated lands found to be held free by any temple were of course so entered in the Khasrahs, and much "Kil" land, (*i. e.* land for the time out of cultivation) was pointed out by zemindars and temple managers as pertaining to the temple grants, and entered after the measurements at attestation time. The Superintendents made an enquiry in each case. With few exceptions the area by new measurement came out in excess, and often very largely in excess, of the areas entered in Mr. Erskine's registers, or even of the areas claimed at the reinvestigation before the Assistant Commissioners. In many cases the Superintendents held that all the lands claimed had been held as temple endowments from the times of the Rajas, and that the excess was due to under-statement at original enquiry. Such under-statement in cases where it was very great they held to have been wilful in part, and in part due to the fact (1) that under the Rajas no estimate in Bhar Path had ever been made of temple lands, and so the managers at original enquiry were compelled to make a guess in the dark, (2) that at that time owing to the disorders following on Sikh conquest a great amount of land was for the time out of cultivation, owing to flight of cultivators &c. &c., and the managers as a rule thought themselves required to mention only lands actually in cultivation.

In as many more cases the Superintendents considered that a part of the excess was not *bonâ fide* temple endowment granted by the Rajas, but consisted of lands brought into cultivation out of the culturable waste of the Kothis since the original enquiry; but even here this was only a general conclusion, and in the absence of sanads, maps and accurate standards of measurement, they were unable to identify the genuine part of th... from the rest. ... all of ...

...This w...

...in the Persian m... ...mple maafis. I...

Accordingly with a few trifling exceptions none of the lands claimed in measurements were struck out in attestation, and all were entered in the new settlement papers under the head of Lakhiraj in the name of the temple which claimed them. I myself afterwards took up at different times each case in Kullu, making a verbal enquiry at the time from people acquainted with the localities. In some cases also I made local enquiries myself. But in the end I doubted whether I had treated the cases uniformly in my proposals, so I had a register in English prepared, and went through them all again. This register I submit with this report.

The character of these temple endowments. Class I, Kullu Deotas.

6. Before I come to my recommendations, I think it necessary to give a short description of these temples, as they have a character of their own which must be considered in disposing of their claims.

I have divided them in the register into four classes, of which *the Kullu Deotas* form the first. In this are included all the Deos and Devis, Riklus, Munis, Joguis and Nâgs, which are so numerous in Kullu. Nag is the Snake God, Joguis are fairies of the woods, Riklus and Munis are I suppose men who have attained to a kind of divinity by asectic lives; of the Deos and Devis a few bear names well known in Hindoo Mythology, but most bear purely local names, or the name of the village only.

The Kullu people however appear to regard the whole class alike as local spirits or demons. The temples are picturesque looking buildings: some are large and substantial, with a large verandah room in front, or a covered court around them, in which feasts or "Joggras" are held, and any one can put up; others are very small. Besides the temple there is a treasury or granary built like an ordinary substantial zemindar's house. Generally the temple stands on the village green, surrounded by a few old trees, generally cedar or walnut; sometimes the temple stands apart in a cedar grove or forest, or is found on a peak by a lake, cave, or waterfall. No effigy of the Deota is to be found in the temple, which contains nothing but perhaps a few "pindees" or pointed stones, but with a few exceptions all have a visible sign in the shape of masks or faces in silver or other metal. case. ...se are kept locked up in the treasure house, except on ceremonial occa-dents of ...en they are fastened to the "Rath" and brought out. The Rath to identify the lands ...ried someti... released in suppo... 's head, sometimes sedan

fashion on men's shoulders ; it has a wooden mast or staff, which is dresse out with petticoats, and on which the mask is fastened.

The Rath when dressed out does not look unlike a May garland. So of the larger shrines have large fixed establishments, a kardar or manag an accountant, one or more pojaris or priests, several musicians, seve "goor" or chelas, *i. e.* interpreters of the oracle, standard bearers, to bearers, blacksmith, carpenter, florist, watchman, messenger, carriers loads &c., &c., to all of whom "burtos" or land rent-free in lieu of pay assigned out of the temple endowment. Most have a kardar, a goor, musicians. For some, one man is both kardar, and pojari, and musicians called when they are wanted and get food as pay. The custom of each tem varies, in some a great part of the endowment is held in "barto" assignments the servants : in another there are no such assignments, and all are paid fr the granary or bhundur. A few of the pojaris are Brahmins, or men of a ca like the "Bhojkis," who have become of a Pojari caste, but the great majo ity of Pojaris are Kaneit zemindars. The office of Pojari is generally co sidered hereditary when held by Brahmins or men of Pojari caste, and t musicians generally hold office from father to son ; but the posts of kard or chela &c., &c., are not usually considered hereditary. Most of these Deota are merely objects of worship of a single hamlet or of one or two neighbou ing hamlets ; many however are known as the Deo or Devi of the whole of Pathi, or a whole Kothi. A few of the larger more noted shrines are gene ally respected, and their festivals attended by men from all the surroundin Kothis, or by men of one or more Waziris, all except the very smallest hav their periodical festivals, known as "jatras" or "melas," at which the peopl of the village or villages to which the Deota belongs collect, dressed in their best, and decked with flowers, and feast on a sheep or goat, and rice or flour provided by the temple Kardar. Much Lugri, a kind of fermented liquor is also drunk (except in Rupar or Seoraj), and the men dance while the women sit around and look on. On these occasions the Deota is brought out, and danced backwards and forwards on his Rath, the bearers pre tending to be driven here and there without will of their own, by the will of the Deota. Only the men of the hamlet or hamlets to which the Deota belongs, or who do "Chakari" or service of the Deo share in the feast given by the temple, outsiders may come to the festival but would not ordinarily be allowed to join in the feast. The above is a description which applies accurately enough to the huge majority of these Jatras or

festivals. The only expenses of the shrines are the cost of such feasts, clothes, and ornaments of the Rath and repair of buildings. The greater part of the proceeds of the endowment are, it will be seen, expended in feasts consumed by the villagers. At the festivals of some one of the more noted shrines however, there is a general distribution of food to all comers for one day or for several days, and at one or two shrines periodical Brahm Bhog or distribution of food to Brahmins or Sudda burt, *i. e.* perpetual dole, to Sadhs or Hindoo Faquirs are made; there are also at all these shrines constant Jaggras or feasts given by private persons, which are much like a Jatra only on a smaller scale. A man vows to give a Jaggra, if his wish is fulfilled, or he gives one on birth of a son, recovery from sickness &c., &c. At these Jaggras or at other times questions are put to the Deota, and advice asked on every conceivable subject, through the Goor or Chela, who by whisking round, by flogging himself with chains &c., &c., gets into the properly exhausted and inspired state, gasps out brief oracular answers; very frequently also a zemindar in return for fulfilment of a vow invites the Deota to his house: the Rath, attended by all the servants of the shrine, is brought and a feast given by the host; in this way the Deotas often go from house to house. Again, one Deota or Devi is supposed to be the friend or brother or sister or mother of another, and in such cases they often attend each other's festivals, and interchange visits. A village Devi will in this way go to visit the Deo of a neighbouring village, accompanied by most of the people of her village as a tail; all will be billetted off in the houses of the entertaining village. I have gone into all this detail in the attempt to show—1st, how clearly these temples, with their festivals &c., &c., are connected with the daily lives and social gatherings and amusements of the people; 2ndly, the feature which distinguishes these temples from those in other parts of the Kangra district, and other Hindu countries with which I am acquainted, which is this, that most of them are village institutions, in a way owned, served, and managed by the men of one or more hamlets, or the men of a part or the whole of a Kothi. Instead of a Brahmin family or a succession of Sadhs eating up the proceeds, and treating all outside worshippers alike, we have the zemindars of a hamlet or hamlets who are themselves the only worshippers of the shrine, and who distribute the office of Kardar, Pojari, Chela &c., &c., among themselves, and collectively eat up the proceeds in periodical feasts. The zemindars themselves

are in fact in some degree the real Maafidars, and this is more partic larly the case in numerous instances where the men who cultivate the lands which pay rent to the temple, are perhaps the only or almost the only men entitled to share in the feasts at the temple expense. In some cases there is no doubt but that the rents collected by the temple, cash and grain, are exceedingly light, and the Zemindars are Maafidars in disguise.

The people still respect these Deos and Devis very much: many talk sceptically, but all act as if they feared them. Every misfortune attributed to the "dosh" or "kot," *i. e.* spite or rage of some Deota. Phoongun Joguis command smoking, wearing leather and the use charpoys are forbidden things in the Sarwari valley, and the order obeyed. All that I have said will show how impossible it must be to evidence as to whether the lands held are genuine grants are no; particularly as the leading Zemindars, the Negis, Lumberdars &c., are generally also the Kardars or Pojaris of the temples.

Character of Class II. Thakurdwaras of note.

7. The second class consists of Thakurdwaras of note, consi of large well built temples, furnished with idols, and more or less visited as places of pilgr age. These are orthodox Hindu shrines, managed much in the way as similar temples in other parts of the hills or Hindustan. are in the hands of Brahmin priests; and the Zemindars, *i. e.*, Kane Zemindar Brahmins, and Dogis, who form the real population of K have not much to do with them. Some have festivals or fairs at w by order of former Rajas the surrounding Deos and Devis attend their Rath to do homage. Three or four are at hot springs, two present or former places of the Rajas, others like Nirmand and Trilok are at places sanctified by some Hindu tradition.

Character of Class III. Byragis, Gusains, Brahmins, Thakurs.

8. The third class consists of of Byragis, Gusains, or Brahm Thakurs. Some of these have regular temple small size often attached to a baolee or spr and tank or a Dharmsalla. A Brahmin makes daily offerings to the idol, and then eats them up. On certain days "Uchab" is given, that is, some food is cooked, which is eaten up by Rajas ... and servants and a stray ... hardly anyt...ng in the ...g profuse; waste lands or surplus

fossil or round stone which serves as an idol, are placed in a room in a house not differing outwardly from an ordinary Kullu house, and in which the Byragi or Gusain lives, like an ordinary zemindar surrounded by wives and children, and cultivating the rent free land himself. All these Byragis and Gusains have quite dropped the character of Sadh; the name has become in fact a caste name. The natural or spiritual ancestors of these men came up to Kullu from the plains as Sadhus, and it is well known that at various times this class of men acquired great influence with the Rajas, though not with the people, who stuck to their old Deota or demon worship. Their influence got them grants, but to give a color to the grants and make them less liable to future resumption, the sanads were usually obtained in the name of the idol or Thakur owned by the Byragi. Daily offerings are however made before the stones or idols, on occasional uchab given, and a stray Sadhu entertained; so that it cannot be said that these Byragis' Thakurs are altogether mere domestic idols like the Thakurs which are to be found in the houses of most respectable Hindus in the hills. The Kullu people are devoted to their Deotas, and have little care or respect for these Thakurs.

Character of Class VII. Buddhist.

9. The fourth class consists of Buddhist monasteri... are all in vigorous ex- Lah... ...e, and the proceeds of the grants are strictly isten... applied to the original purpos... ...s of the grants. I have described them in my English orders in the file of ea... ...ch case; see particularly that for the Kee monastery in Spiti.

Explanation of form of English Register submitted.

10. Having described the different ... classes of temples, before giving my proposals I shall ... make some remarks explanatory of the form ... the English register which I submit. Columns 1, 2, 3, 4, need no expl... ...nation. With regard to columns 5 and 6, the number given may be always ... presumed to be the number of Mr. Erskine's Register No. 2, of gra... ...ts in support of temples, except when in the column it is stated that h... ...is Register No. 3 is referred to. All the lands of his Register No. 2 have b... ...een granted in perpetuity, and all in his Register No. 3 for life onl... Go... ...ernment; so that the area and jumma in column 6, except wh... Regist... ...r No. 3 is named, are the sanctioned area and jumma. Where n... ...number is given, it shows th... ...ow ...du... Erskine, and that there ... investi-

treat... and reasons for including ... ...a number ... conclusion

claims whether requiring further report or not in one register.

that they must be treated in a free and not in a technical manner. In the absence of sanads or ancient lists of maafis, and in default of maps or field books, which were not made at original settlement, it was not possible from untrustworthy evidence to say what was the area originally granted by the Rajas, or which under the name of so many Bhar path had been claimed at original investigation and again excluded from the khewats in Mr. Barnes' settlement papers. Again, there was no doubt but that temple lands had often been held without sanads, and that many sanads had been lost in the disturbances before annexation. Again, some excuse was to be made for failure to claim, or under-statement at original investigation. At that time, in 1846-47, we had just taken the country from the Sikhs, who in the three or four years they held it had depopulated it in parts, and thrown large tracts out of cultivation; under such circumstances it was not extraordinary that no one should come forward to claim on behalf of some old temple grants, and that in other cases lands which had never been measured before, and which were partly out of cultivation, should be much under-stated by men suddenly called and asked what they claimed by a new and strange set of rulers.

In short, when not one claimant in fifty had a sanad the absence of a sanad could not be made a decisive point, and under the circumstances of original inquiry under-statement or failure to claim could hardly be held a sufficient reason for summary resumption of all excess, or rejection of claim.

For these reasons it appeared to me to be necessary to treat all these holdings much as if they were now being investigated for the first time, and to use a wide discretion, and be much guided by the present state of the temple, its degree of note and requirements, in recommending how its holding should be treated. I ordered all case of temple holdings to be entered in the same Register, whether already sanctioned or hitherto unreported, whether sanction was sufficient to cover the holding or not. My reasons for this procedure were—1st, that the Commissioner has ordered a general review; 2ndly, because until all the holdings of a similar nature are collected before one, one great feature, *viz:* their collective magnitude, is lost sight of, and further, it is difficult to keep to any uniformity or proportion in treating individual cases; 3rdly, because even where there is a former sanction in very many cases it is not sufficient to cover the present holdings, and because I propose to resume some lands sanctioned by former orders.

General principles on which my proposals in each case are based. Treatment of lands proposed to be cut off as excess holding. Why not proposed that such lands should be assessed except in special cases.

13. I will now give the general principles upon which I have made my recommendations. Of course, when special evidence in regard to the validity of a grant or the original area of a grant was found, it was used whether it told for or against the temples. So also many claims to petty holdings made for the first time in present revision of settlement were summarily rejected and not allowed a place in the Register. But with regard to the great mass of cases, where the facts as to amount, date or validity of original grant were enveloped in the usual cloud of uncertainty, and no special evidence was forthcoming, here the general principles adopted were as follows: *i. e.*, where the temple seemed to be an ancient institution dating from the Rajas' times, and the land claimed as endowment appeared not above the average or excessive with regard to degree of note of temple, its establishments and other requirements, then in default of proved flaw in title, I have recommended the release of the whole in support of temple, even when no claim was made at original enquiry or in the claim then made the holding was much under-stated.

When again the temple appeared to be ancient and to have always held more or less endowment, but the present holding appeared to me to be more than an average or sufficient endowment, probably in part made up of waste lands broken up, and also in excess of the amount claimed at original enquiry or not claimed at all then, then I have recommended the grant of a sanad releasing only so much land as seemed sufficient and equal to the average endowments granted by the Rajas to temples of similar status, and rejection of claim to the surplus. The surplus land in such holdings, I have proposed to treat in two different ways. In by far the greater number of cases I have not proposed to assess such lands and add the amount of assessment to the jumma of the Kothi. My reasons are—*first*, that as the waste lands of each Kothi were included in the assessment, and I believe that most of these surplus lands have been added since settlement from such waste, it is not clear that Government has a right to assess them separately; *secondly*, it would of course greatly increase the unpopularity attending on the refusal to grant these lands; and *thirdly*, unless the business was managed very carefully, aud the assessment made exceedingly light, it is probable that in many cases the zemindars would not be able to pay the extra jumma suddenly imposed. Instead of assessment therefore I have proposed to treat

such surplus holdings as Khalsa lands excluded from the Bachh or distri- tion of the Khalsa jumma by the zemindars, and improperly included in t temple rent-free holdings. I do not, however, propose to leave it to t zemindars to bring these lands into the "Bachh" or not as they please, t in consequence of the inertness and superstition of the zemindars and t influence of leading men connected with the shrines would be pretty sur result in nothing being done, and fourteen years hence when the term settlement expires we should find ourselves in the same predicament as n an order on paper would not have altered the case materially, and it would much more difficult to cut down the holdings after so many more years undisturbed possession. What I propose therefore is, that these lands sh at once be authoritatively brought into the Bachh, *i. e.*, that a new Ba shall be made in every Kothi concerned on all the rateable lands of t Kothi including those surplus temple lands and those formerly rated. T will of course give a rateable reduction in revenue to all zemindars, wh will reconcile many of them to the blow struck at the temples, and it wil a good thing in itself, for the land tax is not always light in Kullu, in fa is a good deal too heavy on most irrigated lands; I have several times zemindars vainly attempting to get some one to take their land as a gift, two European land-holders have told me they could get no profit out of the gross produce, which is what their tenants paid them. Before mak the Bachh it would be necessary to carefully eliminate the surp lands from those to be retained rent free by the temples; this could done for each by the Patwari and manager, with some restrictio *e. g.*, that land to be reserved to the temple should be taken as mu as possible in one or two blocks, &c., &c. It will be advisable also that the same time a map should be made of the reserved lands, or an extr to the village map if already made taken, and filed with the misl. I this way the lands assigned by Government to temples would be once f all clearly set aside, and no further additions would be possible; till this done, there will be no security that fresh additions are not made, as e the new papers in the more mountainous parts of Kullu are somewh rough, and identification of fields is difficult. If Munshi Amin Chan Extra Assistant Commissioner, could be sent up to Kullu for a coupl of months this next cold weather, he and the Tahsildar and Naib Tahs dar (who both served under me in settlement) would readily and easi carry out what I propose, and at same time correct the lists of Lakhir lands in the new settlement misls. If the operation be delayed, it would eventually prove a very difficult and confusing task.

It is only in a small number of cases as already said, that I have proposed to assess these surplus lands, and when I have done so it has always been for special reasons, *e. g.*, it has seemed to me that there was gross wilful and fraudulent under-statement at original investigation of the amount of land then held, which deserves some punitive notice, or the land is held and cultivated by Brahmins or Byraghees connected with the temple who hold no other lands paying revenue to Government, &c., &c. It is not necessary to say more, as my reasons are given in full in each file. This assessment could be well and safely done by Munshi Amin Chand, at one and the same time with the other work proposed above to be entrusted to him, on the spot; and with a good deal of discretion allowed to him, he would do it in a way which would cause little hardship or discontent, and which would not disturb unnecessarily the affairs of the temples.

What part of my proposals can be carried out at once if Commissioner approves, and what part requires orders of Government.

14. As before explained, in para 12, all temple lands whether heretofore sanctioned or as yet unsanctioned have been shown in the same Register, and a recommendation given with regard to each by myself; but some, if you agree with me, require no further orders, while the others will have to be submitted to Government. They will all I think come under the following heads, and I have marked each case in the register with red ink according to the head under which it comes.

A 1. Where sanction of Government releasing land in support of temple has already been obtained, and the holding by present returns does not seem to be really in excess of sanction, or the excess is less than 15 per cent and within my competency to pass.

A 2. Where sanction, &c., &c., has already been obtained and I propose to cut off the excess in the holding to such an extent as to reduce the holding to an amount within the sanction. In cases under the above heads if you approve my proposals they can be carried out at once in full and nothing more remains to be done.

B 1. Where sanction, &c., &c., has already been obtained, but the holding is clearly in excess of sanction by more than 15 per cent, and I propose that the whole shall be released, or propose to cut off some but not enough to reduce the holding to amount of sanction.

B 2. Where there is no sanction of competent authority obtained or where the land was formerly released for life of an individual only, and I now propose to release the whole or a part in support of a temple.

B 3. Where I propose to resume in whole or part land released in support of temple by former orders of Government on other grounds than that of holding in excess.

Cases coming under these heads in B 1, B 2, B 3, will, I presume, have to go up to Government for orders, but where it is part of my proposal that a part of the excess or a part of the unsanctioned holding should be cut off or resumed, there is no necessity to postpone action on that part of my proposal; such part can be resumed at once and sanction applied for the release of the remainder afterwards. I venture to suggest that, where possible action may be taken at once. In a year or two it will be much more difficult to cut down or reduce the holdings than at present and the men especially fit to carry out the work whom we have on the spot at present may probably be absent.

From Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superintendent Jallandar Division, to J. A. E. Miller, Esquire, Secretary Financial Commissioner Punjab, No. 288, *dated* 11*th September* 1869.

I have the honor to forward, for persual, in original, a report from Mr. Lyall, Settlement Officer, on the subject of rent-free grants for temples and religious institutions in the sub-division of Kullu.

2. My object in submitting this report is to solicit an opinion on a view of the case which is not presented in Mr. Lyall's letter, but which has formed the subject of conversation between that gentleman and myself.

3. It is, that it may possibly be the wish of the Government that at present no interference should be exercised with reference to these grants. Mr. Lyall informs me that Mr. Forsyth's opinion tended in that direction, and as there is not so far as I am aware any direct order from your office or from the Government, regarding the investigation of these grants, I request the favor of your obtaining the orders of Government on the subject.

4. May I request the favor of an early reply, as I am proceeding towards Kulu next week, and should wish in case of the investigation into these tenures being ordered to conduct it on the spot.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to T. H. Thornton, Esquire, Secretary to Government, Punjab, No. 747*A, dated* 16*th September* 1869.

I am directed to forward, for the orders of Government, a letter in original from the Commissioner of Jallandar, No. 288, dated 11th instant, with enclosure from Mr. Lyall, Settlement Officer, being a very complete and interesting history of the religious institutions in Kullu and of the investigations that have been made regarding them.

2. It is impossible to offer an abstract of Mr. Lyall's report, which though long will well repay perusal; suffice it to say that during the late revision of settlement operations a complete examination into the lands held by religious institutions has been made; that for a portion only of these holdings the orders of the Supreme Government exist; and that the lands are frequently found to be in great excess of what was sanctioned or what can be fairly claimed. Mr. Lyall proposes to deprive the institutions in some instances of the whole or part of this excess, and even to resume land on other grounds. In some cases the land was released under orders of the Supreme Government for the life of an individual, and it is now proposed to release it in perpetuity in favor of an institution.

3. The Commissioner of Jallandar asks the question whether these holdings should be interfered with at all. Mr. Lyall has prepared detailed registers, in which each case is entered, and if the matter is to be taken up, the Commissioner will record his own opinion on each case before sending these registers up for the orders of Government. The registers have not been sent to this office.

4. The Officiating Financial Commissioner strongly advocates the carrying on of Mr. Lyall's labors, or, in other words, that the cases referred to should be reported as soon as practicable. Mr. Lyall has evidently dealt with the matter in a liberal spirit, and there need be no apprehension discontent provided only the thing is done at once.

5. The Officiating Financial Commissioner concurs in the princi[illegible] which Mr. Lyall has enunciated in his report, both in regard to the rele[illegible] or resumption of the lands, and the disposal of such as may be resumed.

From T. H. Thornton, Esquire, Secretary to Government, Punjab, to J. A. [illegible] Miller, Esquire, Secretary to Financial Commissioner Punjab, No. 11[illegible] dated 24th September 1869.

I am directed to return the original enclosures of your letter No. 747A-5577A, dated 16th instant, regarding Mr. Lyall's investigations into [illegible] religious institutions of Kulu; and in reply to request that the ackn[illegible] ledgments of Government may be conveyed to Mr. Lyall for his very [illegible] labors. His Honor thinks his report (without annexures), or at all eve[illegible] portions of it, might with advantage be published amongst the Selecti[illegible] from the Records of the Financial Commissioner's Office.

2. With reference to your 4th paragraph, His Honor requests that [illegible] Commissioner of Jallandar may at once take up the detailed registers [illegible] pared by Mr. Lyall, and submit them as proposed to the Financial Comm[illegible] sioner, who should transmit them to this office for the orders of Governm[illegible] with his own opinion recorded on them.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, [illegible] Lieutenant Colonel H. W. H. Coxe, Officiating Commissioner and Superin[illegible] dent, Jallandar Division, No. 5905, *dated 4th October* 1869.

Forwards copies of Secretary Financial Commissioner's No. 747A, dat[illegible] 16th instant, and of Government reply thereto, for compliance, with refere[illegible] to his No. 288, dated 11th ultimo.

No. XXXIV.—LEVY OF A TAX ON ENTIRE HORSES.

Extract from Indian Public Opinion.

It strikes us that by imposing a small tax on all entire horses, Government might very materially improve the breed and at the same time put a little money into the Treasury. The owner of any colt could escape the tax by having his animal gelt, which he would be sure to do unless it gave promise of superior excellence. Such a tax would inevitably have a good effect on the breeds of all kinds of horse-flesh; for it would effectually prevent numbers of miserable, boneless, fiddle-headed creatures from perpetuating their peculiarities, while it would probably cause the keeping of stallions for breeding purposes to become a distinct branch of business. At present, the feelings of all true lovers of horse-flesh are daily outraged by the sight of the equine caricatures which are suffered to live with all their powers of mischief unimpaired; whereas it would be a consolation to know that their owners, if they persist in keeping up the breed of such monstrosities, would have to pay a fine to the public for their wrong-headedness.

Government is at great trouble and expense to supply stallions to each district throughout the north west, but its efforts are to a great extent neutralized, while the zemindars, rather than send their mares a few miles for the services of these animals, are at liberty to avail themselves of anything in the shape of a horse nearer home, without regard to its possessing any kind of strength except in the reproductive organs.

From Lieutenant Colonel H. P. Babbage, Deputy Commissioner Goojranwalla, to Lieutenant Colonel J. E. Cracroft, Commissioner and Superintendent, Lahore Division, No. 435, *dated 20th October*, 1869.

I annex a printed extract from the *Indian Public Opinion* of 19th October regarding a tax upon horses. I know nothing whatever concerning the author, but the idea seems so good a one that I hope it may be adopted.

2. The proposal is to put a tax upon all entire horses,—mares and geldings remaining untaxed.

3. I believe that if this were carried out it would in a very few years produce a most important change in the breed of horses in this country, especially if the money realized by the tax were devoted to supplying good Arab and Stud-bred stallions liberally over the country in the best breeding districts.

4. Probably after 10 or 12 years the breed would be so improved that the Government stallions might be withdrawn, and horse breeding left altogether to the private dealers.

5. The tax need not be large, probably two rupees per horse would be sufficient, and the collection might be made with the land revenue, and would not be difficult. Colts with milk teeth, or, say up to four years would be free.

From Lieutenant Colonel J. E. Cracroft, Officiating Commissioner and Superintendent, Lahore Division, to Deputy Commissioners of Lahore and Ferozepore, Circular No. 151, *dated* 25*th October* 1869.

Forwards in original No. 435 dated 20th instant, from the Deputy Commissioner Goojranwalla, and enclosure, relative to the imposition of a tax upon entire horses, and requests the favor of his opinion and that of intelligent natives of his district, on the subject.

2. The Deputy Commissioner Lahore will be good enough to forward this Circular and enclosure to the Deputy Commissioner Ferozepore by whom it should be returned with his reply.

From L. H. Griffin, Esquire, Deputy Commissioner, Lahore, to J. W. Smyth, Esquire, Officiating Commissioner and Superintendent Lahore Division, Letter No. 718, *dated* 8*th December* 1869.

In reply to your Circular No. 151 of the 25th October, relative to the imposition of a tax upon all entire horses, I have the honor to state that intelligent natives of the district have been consulted on the subject by the

Tehseeldar. The general opinion is against the tax, and wherever it is approved it is recommended that the tax should fall only on horses of a value of Rupees 100. This is in exact opposition to the principle of the scheme, which would desire to tax the worst horses the most heavily.

2. I agree *in toto* with the scheme proposed as to its advantages, and the improvement of the breed of horses is a subject of great interest to me; but I, nevertheless, do not think the time has arrived when the idea can be carried out, and I think that the imposition of the tax would be very unpopular in the district. Perhaps next year, when the people are better off and the income tax is reduced, the proposal might be again put forward.

From G. Knox, Esquire, Officiating Deputy Commissioner Ferozepore, to J. W. Smyth, Esquire, Officiating Commissioner and Superintendent Lahore Division, letter No. 424, *dated* 19*th November* 1869.

I have the honor to acknowledge receipt of your Circular No. 151 dated 25th October 1869, with enclosures.

2. I do not enter into the question of the advisability of levying a tax for all horses, but, as regards stallions, I find that the zemindars are not at all backward in bringing their mares to be covered by the Government stallions, and when this can be done so easily, recourse would naturally not be had to others of an inferior description.

3. It is true that many mares that are brought for being covered are rejected on account of their size or defects of sorts, but it does not follow that good stallions might not be found for them amongst the zemindars. The breed must be improving greatly from the fact of there being so many good Government stallions throughout the country. I am doubtful under the circumstances whether the imposition of a tax would be advisable for the sole purpose of further improving the breed.

From J. W. Smyth, Esquire, Officiating Commissioner and Superintendent La[illegible] Division, to J. A. E. Miller Esquire, Secretary to Financial Commiss[illegible] Punjab, No. 2—25 dated 5th January 1870.

No. 435 dated 20th October 1869 from Deputy Commissioner Goojranwalla to Commissioner.
No. 151-3341 dated 25th Do. from Commissioner to Deputy Commissioners Lahore and Ferozepore.
No. 424 dated 19th November from Deputy Commissioner Ferozepore to Commissioner.
No. 718 dated 8th December from Deputy Commissioner Lahore to Commissioner.

I have the honor to forward for such notice as may be deemed nec[illegible] sary by the Financial Co[illegible] missioner, the correspond[illegible] noted in the margin, rela[illegible] to a proposal made by Lie[illegible] nant Colonel Babbage, Off[illegible] ating Deputy Commissi[illegible] of Goojranwalla, to levy a [illegible] upon all entire horses, with the view of improving the breed of hors[illegible] the Punjab.

2. I am not myself in favor of the proposal, not because I do not [illegible] to see every legitimate means taken to improve the breed of horses, b[illegible] cause I do not think that the proposal now made can be legitim[illegible] resorted to; we do not seek to improve the cotton of the Punjab b[illegible] posing repressive taxes on the inferior indigenous varieties; we pr[illegible] superior seed, and do all we can to induce the Zemindars to use it, an[illegible] adopt improved methods of culture; but I do not think any one w[illegible] venture to propose that fields sown with inferior varieties of cotton sh[illegible] be taxed solely with the view of inducing the zemindars to use co[illegible] seed of a superior quality.

3. And why should we adopt a different principle in regar[illegible] horses? It appears to me that the system now in force is the only le[illegible] imate way of improving the breed; we provide (as far as practicab[illegible] stallions of a superior breed, encourage the zemindars to use them, h[illegible] horse fairs, where facilities are offered for the disposal of the produce, [illegible] where prizes are awarded for the best animals. The rest we must le[illegible] to the operation of the ordinary law of supply and demand. I can se[illegible] sufficient reason for a raid of extermination against the present rac[illegible] Punjabee entire horses. It may be desirable that horses fit for milit[illegible] purposes should be produced in large numbers, but the present rac[illegible] Punjabee horses meets the wants of the great mass of the people; and [illegible] long as that is the case improvement will be slow. Cheap [illegible]

useful horses, albeit of inferior breeds, will, like cheap and useful piece goods, always find numerous purchasers, and do what we will they will be produced to meet the demand.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab, to Major S. Black, Secretary to Government Punjab, Military Department, No. 264, *dated* 13*th January*. 1870.

Submits in original a letter, No. 2 dated 5th current, from the Commissioner Lahore Division, giving cover to a proposal made by the Deputy Commissioner Goojranwalla for levying a tax an all entire horses, with a view of improving the breed of horses in the Punjab; and intimates that the Officiating Financial Commissioner concurs with the Commissioner in considering the imposition of the proposed tax to be objectionable.

From Major S. Black, Secretary to Government, Punjab, Military Department, to the Financial Commissioner Punjab, No. 709, *dated* 25*th February* 1870.

In returning the original enclosures of your memo. No. 264 dated 13th ultimo, I am desired to state that His Honor, agreeing with Mr. Smyth, Officiating Commissioner of Lahore, does not think it judicious or possible at the present moment to levy a tax upon stallions.

2. At the same time His Honor considers that many advantages would arise from the general introduction of the practice of gelding, and that this should be encouraged by every legitimate means. Apart from the question of improving the breed of horses, this measure would render the animals more generally useful to their owners, and would greatly diminish the number of accidents to life and limb arising from the viciousness of entire horses.

3. But a tax such as is proposed would, His Honor feels assured, prove extremely unpopular; and therefore he does not think that the time has arrived for imposing it.

[illegible] with the [illegible] [illegible] and [illegible] [illegible]

[illegible]

[illegible]

[illegible] Secretary to the [illegible]

[illegible]

[illegible] original letter [illegible] from the Com-
[illegible] Division, giving cover to a proposed [illegible]
[illegible] for [illegible]
[illegible] improving the breed of horses in the [illegible]
[illegible] Financial Commissioner concurs with the Commissioner [illegible]
the imposition of the proposed tax to be objectionable.

[illegible]

[illegible] Secretary to Government, Punjab [illegible]
Financial Commissioner, Punjab [illegible]

In returning the original enclosures of your [illegible]
I am directed to state that [illegible]

[illegible]

[illegible]

No. XXXV.—REPORTS ON THE DEWALEE AND BYSAKHEE CATTLE FAIRS, HELD AT UMRITSUR, ON THE 4TH NOVEMBER 1869 AND 11TH APRIL 1870, RESPECTIVELY.

From Major General R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent Umritsur Division, to J. A. E. Miller, Esq., Secretary to Financial Commissioner Punjab, No. 240, *dated 28th September* 1870.

Replies to No. 5217, dated 2nd instant. Transmits Umritsur district Reports on Cattle fairs of Dewalee 1869, and Bysakhee 1870, Nos. 349 and 352, dated 15th and 23rd September, respectively.

From Major F. M. Brich, Deputy Commissioner Umritsur, to Major General R. G. Taylor, C. B., C. S. I., Commissioner and Supdt. Umritsur Division, No. 349, *dated 15th September* 1870.

In accordance with Secretary to Financial Commissioner's No. 5217, dated 2nd September 1870, I have the honor to submit a report on the Dewalee Cattle Fair, held on the 4th November 1869, and I regret that this was not done before. Owing to a variety of causes which made the year 1869 a peculiarly difficult one at Umritsur, I overlooked the fact that such a report was required.

The fair is held in a large piece of uncultivated ground about two miles down the Grand Trunk Road, on an open tract of land much broken up into ravines and hollows, which are utilized by letting canal water into them, so that the vast herds of cattle that come to this fair should have easy access to water. Buffaloes form more than nine-tenths of the total amount of cattle that are brought to the fair.

Buffaloes, ...	1,03,629.
Kine, ...	4,398.
Camels, ...	3,318.
Sheep and Goats,	142.

The abundant water-supply presents special facilities for the indulgence of the peculiar habits of this animal, and no doubt contributes to the popularity of the fair.

The provisions of the Commissioner's Circular No. 180 of 16th Octo[ber] 1869, Government Circular No. 33 of 16th September 1869, were attended [to]. It was found that the zemindars had never made any complaint or cla[im] and were benefitted by the manure after the fair. On comparison with t[he] statistics of the previous year, it was found that there had been a falli[ng] off in the numbers. The total for 1868 being 1,19,002, against 1,11,4[..]. There was a diminution pretty nearly under every head.

I can account for this chiefly by the notorious insalubrity of Umrit[sur] during the summer and autumn of 1869, which operated in prevent[ing] many coming. Indeed in some districts people were warned not to co[me] to Umritsur fairs. The autumn fair at Turun Tarun Tank was not allo[wed] to take place, and no doubt to the agricultural Sikhs, the opportunities [of] combining business with devotion is one of the inducements of visi[ting] Umritsur. There had also been a great mortality amongst the ca[ttle] owing to scarcity of fodder in the early part of the year. Still the scale [on] which the fair was held, with over a lac of head of cattle, may be term[ed] gigantic, and as the previous six months of the year had been marked [by] both famine and pestilence, I considered at the time that the prosperity of [the] fair was extraordinary and might be cited as proof of its established popula[rity].

The rate at which the contract was sold, that of only one pie in the ru[pee], whereas last year it was 1-8-0 per cent, will account for the yield being Rup[ees] 1,440-0-0 instead of Rupees 2,550-0-0 last year.

The reduction was granted by me as the Umritsur funds were flo[ur]ishing, and indeed I cannot help recording the chagrin with which I [was] compelled to part with money collected at Umritsur for the use of o[ther] districts, when so much remains to be done in the way of cattle breed[ing] here. My office No. 1947 of 13th December 1869 will shew the uses to wh[ich] I desired to put the surplus money.

The prizes distributed amounted to Rupees 289-0-0 against Rup[ees] 302-0-0 in the previous year. I effected a reduction of one-half in t[he] charge for canal water, *viz.*, Rupees 336-0-0 instead of Rs. 786-0-0, but th[ere] was quite sufficient supply. The Prize Committee were primarily [the] Zaildars and Lumberdars, under the supervision of the Tehseeldar, Gob[ind] Sahai, who was as usual most active and intelligent in the matter; an[d]

secondly, a Committee of Native Gentlemen, names as per margin, awarded the prizes. Mr. F. Halsey of the Bank of Bengal was so good as to assist me in selection and distribution, and I am obliged for his assistance.

Sirdar Bhugwan Singh.
" Ajeet Singh.
" Hurchurn Dass.
Khan Mahomed Shah.

STATEMENT of Cattle brought to Dewalee fair of 1869, *and detail of prizes awarded.*

Description of Cattle.	No. brought to fair.	No. selected as good specimens of total number brought.	Number for which prizes were awarded.	Detail of prizes. Age of animals.	No. of prize.	Amount.	Name of owner.	Village.	District.
Bulls, ...	1898	6	6	2 years.	2	10	Mahomed Buksh	Tehseel Rya,	Sealkote.
					...	10	Bhuggut Singh	Boodhayi,...	Lahore.
					...	10	Khair Deen, ...	Umritsur, ...	Umritsur.
					1	8	Kishn Singh, ...	Do.	Do.
					2	15	Parus Ram, ...	Hissar, ...	Hissar.
					Total,	53			
Calves, ...	242	3	3	3 years.	1	50	Jeewun Singh,...	Pusroor, ...	Sealkote.
					1	25	Bukhtawur, ...	Umritsur ...	Umritsur.
					1	10	Chunda Singh,...	Do.	Do.
					Total,	85			
Male Buffaloes, ...	29,982	...	...	...	...	...			
Cows, ...	1,935	4	4	3 years,	1	5	Hakoo, ...	Umritsur,...	Umritsur.
					3	9	Amanut, Mahomda and Mahee,... ...	Umritsur,...	Umritsur.
					...	...			
					...	...			
					Total,	14			
Heifers, ...	323	1	1	3 years,	1	5	Sham Dass, ...	Do.	Do.
Female Buffaloes, ...	25,799	7	7	4 years,	4	36	Boota, Mull Sing,	Moga, ...	Ferozepoor.
							Utter Sing, ...	Nekodra, ...	Do.
					3	15	Ditta, ...	Umritsur,...	Umritsur.
					...	...	Husson, ...	Attaree. ...	Do.
					...	...	Udoula, ...	Do.	Do.

Buffaloes' Calves, ...	19,893								
Heifers, ...	27,955								
Male Camels, ...	1,933 }	10	10	5 years.	1	16	Sidoo, ...	Umritsur, ...	Umritsur.
Female, „	865 }								
					1	14	Doala, ...	Jahpanee,...	...
					2	15	Ganoon, ...	Dhurmkote.	Goordaspoor.
					1	8	Hurkishn, ...	Turn Tarun.	Umritsur.
					1	8	Hussoo, ...	Chooneean.	Lahore.
					2	10	Roda, ...	...	Umritsur.
					1	5	Goormookh Singh,	Deereewala.	Ditto.
					1	5	Heera, ...	Susra.	Sealkote.
					Total,	81			
Male young Camels,	302	...	..	...	...	...			
Female „ „ ...	218	...	...	...	...	...			
Sheep, ...	59	...	...	...	...	...			
Milk Goats, ...	83	...	...	...	...	...			
Total, ...	1,11,487	31	31		30	289			

From Major F. M. Birch, Deputy Commissioner Umritsur, to Major Gen[eral] R. G. Taylor, C. B., C. S. I. Commissioner and Superintendent Umritsur Division, No. 352, *dated* 23*rd September* 1870.

I have the honor to report, with reference to the Financial Commission[er's] No. 5217, dated 2nd instant, on the Bysakhee Cattle Fair, held on the 1[...] April 1870 at this place.

Of the two large Cattle Fairs for which Umritsur is famous, the spr[ing] fair is the most frequented as the figures shew. The previous Bysakh[ee] 1869 had been a most successful fair, at which it was computed t[hat] 1,28,912 head of cattle were brought in. The returns for the fair of 1[870] shew a grand total of 1,25,468, which slight falling off must be attri[buted] to the exhaustion of the previous year, one of great mortality in cattle, fr[om] which the country had not had time to recover. The spectacle pres[ented] by the collection of these vast numbers of animals was certainly a mag[ni]ficent one. The area set apart for the assemblage is 132 acres, but t[he] numbers were so great that the sides of the road for several miles w[ere] occupied. It was very hot, and the people were delighted to get under t[he] shade of the road-side trees. The fair is however, strictly one for busi[ness] and no space was wasted on play booths or amusements of any sort.

The rate at which the contract was sold, as at the previous Dew[alee] was only one pie in the rupee. The sale realized Rs. 1,400.

At the Bysakhee of 1869 the rate was 1-8-0 per cent and the amo[unt] realized Rs. 2,550.

The prizes awarded amounted to Rs. 633 against 395 in the previ[ous] year. I believe that the fair is so flourishing that further encouragement [in] this matter is scarcely called for. The Financial Commissioner's Circu[lar] No. 34, dated 24th June 1870, however, lays down an enhanced rate f[or] prizes, which will be tried at the ensuing Dewalee fair, and the res[ult] reported.

The prize animals, especially the Buffaloes, were exceedingly fine. T[he] very few Cows exhibited was remarked upon. The fact is the people do n[ot] wish to part with them. Such as were exhibited were small. The Bullock[s] or Kine generally from down country quite out-shone those of the Punja[b]. But the Buffaloes were Punjabees, and constituted the pride of the fai[r]. As a rule, I should say that the Kine of the Punjab runs small, but the[...]

is no reason that they should, for the country can support the unwieldy buffaloes quite as easily.

Buffaloes are cheaper than other cattle, can be purchased for Rs. 20-0-0 or 30-0-0. Bullocks cost twice that sum. The Buffaloe milk is said to yield more ghee. They are but seldom used in ploughing except by the poorest, and are chiefly kept for the milk and ghee. The Camels were very inferior; a couple of Sowarree Camels were awarded prizes. They had fallen off in numbers and were unworthy of prizes.

The Sheep and Goats were not brought in. They muster stronger at the Autmun (Dewalee) fair.

The arrangements were made throughout by Tahseeldar Gobind Sahai, with great energy and success. His exertions have been noticed by my predecessors, and I hope that a khillut may be given him by higher authority in recognition of the flourishing condition of the Cattle Fairs while he has been Tahseeldar of Umritsur. He superintended the Sub-Committees of Zaildars and Lumberdars. The names of native gentlemen who assisted on the Grand Committee are given in the margin. The Reverend R. Bateman and Mr. F. Halsey were kind enough to help me to distribute the prizes, and were also on the Grand Committee. I should be glad to know if, for the future, prizes are to be restricted to native owners only.

Sirdar Hurchurn Dass.
" Ajeet Singh.
" Dave Singh, Commandant, and Zaildar of Umritsur Tahseel.

STATEMENT OF CATTLE BROUGHT TO BYSAKHEE FAIR OF 1870, AND DETAIL OF PRIZES AWARDED.

Description of Cattle.	Number brought to fair.	No. selected as good specimens of total number brought.	Number for which prizes are awarded.	Detail of Prizes.			Name of Owner.	Village.	District.
				Age of Animal.	No. of Prizes.	Amount.			
Bullocks for Ploughing,	5,133	2	2	4 Years,	2	20	Sobha Singh, ...	Golewal, ...	Puttealah.
Do. for Carriage, ...	2,150	13	13	Do.	3	20	Purs Ram, ...	Hissar, ...	Hissar.
					2	30	Shere Singh, ...	Moola, ...	Umritsur.
					2	20	Kesur Singh, ...	Puttee, ...	Lahore.
					1	8	Ram Singh, ...	Maneewala, ...	Ferozepore.
					1	8	Mahomed Buksh,	Googlee, ...	Sealkote.
					1	5	Sunta, ...	Maun, ...	Lahore.
					1	5	Golab Singh, ...	Dhurmkote, ...	Ferozepore.
					1	8	Utter Singh, ...	Rawarree, ...	Putteala.
					1	8	Jowala Singh, ...	Bhoolwind, ...	Umritsur.
					Total,	112			
Calves, ...	3,360	2	2	2 Years,	1	20	Chunda Singh, ...	Loolanee, ...	Lahore.
					1	15	Weer Singh, ...	Ween Poeen, ...	Umritsur.
Calves, ...	2,150	4	4	3 Years,	1	50	Mr. Halsey, ...	Umritsur, ...	Umritsur.
					1	10	Khurk Singh, ...	Sheron, ...	ditto.
					1	10	Bela Singh, ...	Puttee, ...	Lahore.
					1	25	Jeewan, ...	Loharun, ...	Ferozepore.
					Total,	[illegible]			

Cows, ...	12,182	3	3	4 Years,	1	10	Gunesha Lall, ...	Umritsur, ...	Umritsur.
					1	8	Jawala Singh, ..	Morunghsingh-wala, ...	Lahore.
					1	8	Kahna, ...	Jora, ...	Goordaspore.
					Total,	26			
Heifers, ...	5,912	1	1	2 Years,	1	15	Nurjan Singh,	Boorj, ...	Umritsur.
Female Buffaloes,	40,758	11	11	4 Years,	1	30	Shurfoo, ...	Kurtarpore, ...	Jullundhur.
					1	30	Gobind, ...	Rajasansee, ...	Umritsur.
					1	10	Jemul Singh, ...	Ranee, ...	Ferozepore.
					1	10	Moja, ...	Maga, ...	Do.
					1	10	Tota Ram, ...	Bhamul, ...	Nabha.
					1	10	Phoola, ...	Ruttoo Nungul,	Umritsur.
					1	10	Gordit Singh, ...	Gapwal, ...	Puttealah.
					1	10	Nodh Singh, ...	Chukeean, ..	Ferozepore.
					1	10	Jumna, ...	Majeetha, ...	Umritsur.
					1	10	Hem Singh, ...	...	Furreedkote.
Male Buffaloes,	52,651				Total,	140			
Total, ...	1,24,296	36	36	...	...	443			
Camels, Male,	998	6	6	4 Years,	6	5	Gamoo, ...	Futtehgurh, ...	Goordaspore.
						5	Roda, ...	Kurraleean, ...	Umritsur.
						5	Hurkishen, ...	Turun Tarun, ...	Do.
						5	Khurk Singh, ...	Maewal, ...	Mullairkotela.
						5	Gunga Singh, ...	Sutrah, ...	Sealkote.
Ditto, ...						5	Prem Singh, ...	Mullair, ...	Kotela
Female, ...	174	2	2	4 ditto,	2	25	Must. Dhurmo,	Suthere, ...	Sealkote.
						25	Mahna, ...	Kulloke, ...	Ferozepoor.
Total, ...	1,172	8	8	...	Total,	80			

STATEMENT.—*Concluded.*

Description of Cattle.	Number brought to fair.	No. selected as good specimens of total number brought.	Number for which prizes are awarded.	Detail of Prizes. Age of Animal.	No. of Prizes.	Amount.	Name of owner.	Village.	District.
Mules, ...	...	7	7	3	1	20	Mahomed Khan,	Pusroor, ...	Sealkote.
					1	15	Gunga Singh, ...	Booteeala, ...	Rawul Pindee.
					1	15	Pyara, ...	Do.	Do.
				4	1	20	Ram Ruttun, ...	Kurreeala, ...	Jhelum.
					1	20	Pohoo, ...	Attaree, ...	Amritsur.
					1	10	Esur Singh, ...	Attaree, ...	Do.
					1	10	Hunooka, ...	Izzutwar, ...	Ferozepore.
		7	7	...	...	110			
Grand Total	1,25,468	51	51	...	50	633			

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Punjab to Major General R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent Umritsur Division, No. 5969 *dated* 8*th October* 1870.

With reference to your No. 240 dated 28th September, I am directed to convey sanction to the bills for expenses of Cattle Fairs at Umritsur, received with No. 209, dated 5th August 1870.

2. The Financial Commissioner approves of the recommendation of the Deputy Commissioner to confer a khillut on Tehseeldar Gobind Sahai, for his exertions in connection with these Cattle Fairs. The sum of one hundred rupees may be granted to him from the Umritsur Cattle Fair Fees Fund.

The Financial Commissioner considers that there is no objection to Europeans being allowed to exhibit cattle and compete for prizes, but no exhibitor should be a Judge in the class in which he exhibits, but he may be a Judge in other classes. These papers will be printed in the "Revenue Selections."

No. XXXVI.—REPORT ON CATTLE FAIRS HELD IN THE SYALKOT DISTRICT, IN 1870.

No. 297, *dated* 6*th December* 1870.

From Major General R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent Amritsur Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Panjáb.

Transmits, in original, Syalkot District Report, No. 412, dated 19th ultimo, on Cattle Fairs, with annexures, and recommends, for favorable consideration, the recognition of the "Gooloo Shah" fair by Government, noticed in paras. 9 and 14, and the grant of Rs. 600 from Cattle Fair fees for the construction of two pucca wells at the site of the fair. Fairs are an undoubted means of giving impetus to trade.

No. 412, *dated* 19*th November* 1870.

From Major C. V. Jenkins, Deputy Commissioner Syalkot, to Major General R. G. Taylor, Commissioner and Superintendent Amritsur Division.

I have the honor to report, with reference to the Cattle Fairs in this district, that the sixth Cattle Fair was held at Syalkot at Ber Baba Nanuck, on the 3rd, 4th, and 5th October last, during the Dushera holidays. This is a sanctioned Cattle Fair : notices were sent out on 1st August.

2. On the 30th August last, application was made through Commissioner and Superintendent for the expenditure of Rs. 513 lying in deposit at that time, which were realized at the Gooloo Shah fair of 1869 ;—sanction was received from Financial Commissioner in his No. 5907, dated 6th October, under docket from Commissioner, No. 351, dated 14th idem.

3. Prizes to the amount of Rs. 302 were awarded to exhibitors and owners of Cattle on 5th October 1870, (as per Statement attached), and Rs. 111-5-3 expended on contingencies. Last year, owing to lowness of funds (which were received from Amritsur), only Rs. 157 were distributed in prizes, and Rs. 94 expended on contingencies.

4. The total number of Cattle exhibited this year, as compared with last, is as follows :—

	1869.	1870.
Male Buffaloes, ...	40	195
Female do. with Calves, ..	200	351
Cows with Calves, ..	48	166
Bullocks, ...	107	75
Mares with foals, ..	3	34
Horses, ...	117	15
Mules, ...	...	1
TOTAL, ...	515	837

Shewing an increase on the whole of 322 heads of Cattle.

5. The deficiency in the number of horses brought this year, c pared with last, is accounted for thus:—Last year it was not made k that no prizes for horses would be distributed, this year the proclama made this known, it was however thought right to remunerate the o of horses brought to the fair for their trouble in the way of allowing something for feed.

6. No person could be found to take the lease of this fair this —the yield is so small that it holds out no inducement to the contra A fee of 6 pies per rupee was authorized to be levied on each head of C sold, which amounted to the very insignificant sum of Rs. 26, Rs. of which, according to Financial Commissioner's Circular No. dated 13th December 1859, were spent on miscellaneous expenses, such clearing and marking off the site &c., and the other half deposited Treasury.

7. The income from this fair is much below that of last year, (120, which was the maximum ever collected); it is feared that the inc for the future will scarcely exceed that realized this year.

8. The Prize Committee was formed of the following native gen men:—Sirdar Bhugwan Singh of Kulalwalla; Hakim Singh, Hono Magistrate of Daska; Nubbee Bux, Zaildar of Ouliahpoor; Hyat Kh Zaildar of Doolum; Nowrung Khan, Zaildar of Daood; Surjun Sin Zaildar of Aogokee, Boodh Singh, Zaildar of Mirza.

9. The annual religious fair was held at Koorakee, and is known "Gooloo Shah," ending on 22nd September last, after a week's durati This is not an established Cattle Fair, but one at which a very large num of Cattle are brought for sale.

10. This year about 3,000 Cattle were brought, and it is believed sale transactions to the amount of about Rs. 35,000 were concluded. A vast multitude of people assemble here annually, this year about 40 or 50 thousand attended; the fair is a very popular one.

11. The contract this year was sold for Rs. 750, shewing an increase of Rs. 225 over amount realized last year.

12. Of the sum recovered, Rs. 75-13-5 were expended on contingencies under authority of Financial Commissioner's Circular No. 101 of 13th December 1859, and the balance deposited in the Treasury to the credit of the Fair Fund.

* * * * *

14. In thus reporting in detail upon the results of these two fairs, I hold that it will be a matter of considerable importance if the latter fair be also recognized by Government, because there is every promise of beneficial results, with reference to carriage cattle, cows, sheep, &c., which is apparent from the sum realized by small fees on property *actually sold at the late one; if therefore such* is the result under the present system, there is no doubt if notices be duly proclaimed that prizes will be freely distributed, &c., under Local Government orders, and the fair be in every way recognized by the said Government, that the results will be most beneficial to the agriculturists and residents of the district.

15. In concluding this report with my recommendation as above, I would briefly allude to the subject of want of water at Gooloo Shah. There is only one well, and the average daily attendance at the fair, for four or five days consecutively, amounts to no less than 50,000 people.

16. I therefore recommend that two pucca wells, which can be constructed at a cost of about three hundred rupees each = 600 be commenced and finished before the next year's Fair.

17. This fair has, after paying all expenses connected with it, a balance in its favor of Rs. 830 in deposit, and should the Financial Commissioner under your recommendation be prepared to sanction this expenditure, the arrangement will be most beneficial to the health and general comfort of those attending at this annual festival, which is observed as a religious one, and to which cause the fair owes its numerous assemblage, and may be said to have taken its rise from.

Statement of Cattle brought to the Dusherah Fair of 1870, *at Syalkot, and detail of Prizes awarded.*

1	2	3	4	5	6	7	8	9	10
				DETAIL OF PRIZES.					
Description of Cattle.	No. brought to Fair.	No. selected as good specimens of total No. brought.	Number for which prizes are awarded.	Age of Animal.	No. of Prizes.	Amount.	Name of owner.	Village.	District.
Cows, ...	166	2	2	1½ years.	1	8	Ameer Singh,	Sealkote City.	Syalkote.
				3 years.	1	10	Attar Singh,	Versalkey.	
Bullocks, ...	75	22	22	2 years.	1	8	Hakim Singh,	Duska.	
				"	1	8	Wuzeerah,	Kotlee Marel.	
				"	1	8	Shah Deen,	Baseewallah.	
				"	1	8	Raheem Bux,	Sennail Avan.	
				2½ years.	1	10	Mool Singh,	Shutab Gurh.	
				"	1	8	Vassavah Singh,	Boodeh.	
				"	1	8	Deva Singh,	Poorah Hairan.	
				"	1	5	Jowala Singh,	Chunoo Mome.	
				3 years.	1	10	Attar Singh,	Versalkey.	
				"	1	10	Heera Singh,	Ditto.	
				"	1	10	Allah Deen,	Meeanah Porrah.	
				"	1	10	Kumman,	Pucca Gurha.	
				"	1	10	Sekundar,	Bhoollur.	
				"	1	8	Attar Shah,	Dhoondeanwalla.	
				"	1	8	Ameer Singh,	Syalkot.	
				"	1	7	Peer Bux,	Rungpoorah.	
				"	1	6	Ameer,	Gool Bahar.	
				"	1	5	Mukkun,	Meeanahpoorah.	
				"	1	10	Jewun,	Booddean.	
				4 years.	1	10	Mehur Bux,	Sennail Avan.	
				"	1	10	Golam Mahomed,	Alloo Chuck.	
				"	1	10	[illegible]	Varsalkey.	
				"	1	7	[illegible]	[illegible]	

				,,	1	7	...	...	Peer Bux,	...	Rungy Poorah.	Sealkote.
				,,	1	7	...	...	Buggah,	...	Nuvan Meeanapoora.	
				,,	1	7	...	...	Sunt Purkash,	...	Syalkote.	
				,,	1	4	...	...	Doolah,	...	Ditto.	
				,,	1	3	...	...	Thullah,	...	Ditto.	
				,,	1	3	...	...	Munnam,	...	Ditto.	
				,,	1	3	...	...	Ranjah,	...	Ditto.	
				5 years.	1	10	...	...	Doolah,	...	Dhedow Busrah,	
				,,	1	8	...	...	Mullah,	...	Dhurianwallah,	
				,,	1	7	...	...	Lussuh,	...	Lippeywallee.	
				,,	1	7	...	...	Elahiah,	...	Dheera Sunda.	
				,,	1	5	...	...	Fakeer,	...	Syalkot.	
				6 years.	1	7	...	...	Mehur Shah,	...	Chunoo Mome.	
				,,	1	5	...	...	Fuzlah,	...	Syalkot.	
				7 years.	1	4	...	...	Russool Bux,	...	Hajeepoorah.	
TOTAL, ...	592	41	41	...	41	302	...	...				

No. 7285, *dated* 19*th December* 1870.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Pa[illegible], Major General R. G. Taylor, Commissioner and Superintendent A[illegible] Division.

With reference to his No. 297, dated 6th current, conveys Fina[illegible] Commissioner's sanction to the proposed expenditure of Rs. 600, [illegible] hundred, from surplus Cattle Fair Fee Fund of the Syalkot District, for [illegible] construction of two pucca-wells at the site of the "Gooloo Shah" fair, [illegible] to the recognition of this fair as a regular one.

No. XXXVII.—REPORTS BY T. LOGIN, ESQUIRE, C. E., F. R. S. E., EXECUTIVE-ENGINEER, DEPARTMENT PUBLIC WORKS, ON EXPERIMENTAL CULTIVATION OF COTTON.

Extract paras. 18 *and* 19, *from a Report dated* 1*st January* 1870, *on Nile Irrigation and the Suez Canal, relating to Cotton Cultivation in Egypt by T. Login, Esquire.*

Having said a few words about sugar and wheat, I now return to the cultivation of cotton.

18. This crop generally comes in rotation after clover; little manure is used, the decomposed roots of the grass being chiefly depended on. The ground is 2, 3 and often 4 times ploughed, and on the last occasion it is thrown up into drills from 2½ to 3 feet apart, the ridges being 9 inches above the lowest depression. When the land is thus prepared it is well watered, and from 2 to 3 days after, while the soil is yet moist, at every 18 inches or 2 feet, holes are made 2 or 3 inches deep, and from 5 to 10 cotton seeds are dropped in and covered over. As the young plants appear, they are thinned in the same manner as young turnips, leaving only the strongest and healthiest plants.

19. As there is little or no rain in Egypt, the cotton fields are watered every 8 or 12 days, but no large quantity of water is used, as it is only permitted to run between the drills, only reaching half their height, so the water never touches the stem of the plant, only the roots of it by absorption.

The crop begins to ripen about the 15th September, and is all gathered in by January. In October and November, while the crop is being collected, often clover, and sometimes beans are sown between the drills, but the following year the land is left fallow.

From the above it appears that the distance between each plant averages 2′ 9″ × 1′ 9″ that is, each plant has a clear space of about 2½ square feet. When we come and compare this with the mode of cultivating cotton in Upper India, where the seed is thrown in "broad cast," an average space

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From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Panj... Major General R. G. Taylor, Commissioner and Superintendent Am... Division.

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18. This crop generally comes in rotation after clover; little manure is used, the decomposed roots of the grass being chiefly depended on. The ground is 2, 3 and often 4 times ploughed, and on the last occasion it is thrown up into drills from $2\frac{1}{2}$ to 3 feet apart, the ridges being 9 inches above the lowest depression. When the land is thus prepared it is well watered, and from 2 to 3 days after, while the soil is yet moist, at every 18 inches or 2 feet, holes are made 2 or 3 inches deep, and from 5 to 10 cotton seeds are dropped in and covered over. As the young plants appear, they are thinned in the same manner as young turnips, leaving only the strongest and healthiest plants.

19. As there is little or no rain in Egypt, the cotton fields are watered every 8 or 12 days, but no large quantity of water is used, as it is only permitted to run between the drills, only reaching half their height, so the water never touches the stem of the plant, only the roots of it by absorption.

The crop begins to ripen about the 15th September, and is all gathered in by January. In October and November, while the crop is being collected, often clover, and sometimes beans are sown between the drills, but the following year the land is left fallow.

From the above it appears that the distance between each plant averages 2′ 9″ × 1′ 9″ that is, each plant has a clear space of about $2\frac{1}{2}$ square feet. When we come and compare this with the mode of cultivating cotton in Upper India, where the seed is thrown in "broad cast," an average space

of about 1 square foot is allowed each plant, * the whole field is sub ged when irrigated; also when we that the produce is 1-5th to 1-10th of yield, and this an inferior staple to of Egypt, I trust I may be permitted suggest that a dozen Fellahs or brought from Egypt to instruct the cultivators here.

* From actual observation, I find there is no attempt at regularity, for though there may be about 100 plants or more in 100 square feet, the sowing is most irregular, for, in counting the number of plants in a space of 10 feet square, in one quarter of it, I counted 24 plants, another 18, a third 17, and the last no less than 50 in an area of 25 square feet, while in the same field I measured a space 63 square feet in area containing 3 cotton plants.

From T. Login, Esquire, C. E., F. R. S. E., and Member C. E. Inst. to Colonel R. Maclagan, R. E., Secretary to Government Pu Public Works Department, dated 21*st October* 1870.

In 1864-65, while engaged in preparing a project for irrigating Rechna Doab, I often had long conversations about agriculture in E with the Manager of the Belfast Flax Company at Sealkote, who had several years in Egypt, and who was well known to be an intelligent practical farmer. From the information I thus gained, as well as other sources, I was led to think that many practical hints for the provement of agriculture in India might be got by a visit to that count

2. In November last year I had an opportunity to do so, and wh saw and learned during my short stay, I had the honor to communicat Government in my report dated 1st January 1870, so it is not necess now to enter into details. I need therefore only say that in carrying the experiment here, an account of which you have asked for, I tried follow the Egyptian plan of cotton cultivation, as described in my rep in such a manner *that the poorest cultivator in these provinces could do the sa without being put to any extra outlay over the present system in Upper India.* fact I believe there will be rather a saving in labor by adopting the Egyp tian method, as I shall try to show further on; so all that is required is little more *care*; and the object of this report is to show how, by bestowing it, the yield of cotton may be doubled, and even quadrupled, at least if we are to judge by the results (so far as my little experiment goes) here at Bahalgurh, which is 23 miles north of Delhi, on the Grand Trunk Road.

This experiment I have been all the more able to carry out by having fortunately, as Sub-Overseer in charge of this Sub-Division of the road, Zoolfikar Ali, an old experienced man, who started in life as a cultivator, and who has taken as great an interest in this experiment as myself.

3. I should begin by stating that Bahalgurh is situated in the "khadur" (valley) of the Jumna, that the surface soil at the place where the experiment is under trial is neither very good nor very bad, and is known by the name of "dhakur," a dirty grayish brown colour; and has been under grass for several years, being within the compound of the road chowkee. The thickness of this upper stratum is $2\frac{1}{2}$ feet, below which there is $5\frac{1}{2}$ feet of stiff clay, where it is succeeded by very fine sand, and water is reached at this season at a little less than 20 feet below the surface.

4. The area under cultivation is 5880 square feet, or very nearly one-eighth of an acre; and on the 23rd May last operations began by flooding the field with water to a depth of three or four inches, when it was twice ploughed two days later. On the following day it had "khat" (stable refuse) spread over it, on an average about three-fourths of an inch thick, and on the 27th it was again twice ploughed, if scratching to a depth of four inches or so can be called ploughing, after which the ground was smoothed over by having a "mirah" (a plank) dragged side-ways over it.

5. Next day furrows, eight inches high, and three feet apart, were thrown up by the "jindrah," an instrument in common use throughout the Panjab; it is simply a board a little over two feet broad, some seven inches deep, and $1\frac{1}{4}$ to $1\frac{1}{2}$ inches thick, with the lower edge reduced to about half an inch. To this board is attached a handle, four feet long, so that it is simply a broad shovel requiring two people to work it, one holding the handle and directing it, while the assistant by a rope attached to the board at both ends, like a punkah rope to a punkah, pulls this otherwise unwieldy shovel. The furrows by this rude instrument are soon made, so that the cost of making such furrows should not exceed one rupee eight annas per acre, and it is simply in making them that there is any extra outlay on the present system of growing cotton in India, which is more than compensated afterwards by the reduction of labor and saving in seed.

6. After this the field should have been watered a second time by filling the spaces between the furrows or drills to a depth of four or five inches, and two days after that the seed should be sown; but owing to a

mistake the seed was put into the ground the following day, May the 3[illegible] and on 1st June, or two days after, the field was watered.

7. The manner in which the seed is sown was first to rub it in [illegible] cow dung, and then dry it in the sun, as is always the practice here; a[illegible] this small holes are made near the top of the drills at every two feet, [illegible] four or five seed are dropped into each of these holes, covering them [illegible] with earth; but when the plants have grown up a few inches, they sh[illegible] be thinned, and only one, the most healthy, permitted to remain.

8. In the simple process above described consists all the differ[illegible] between the Egyptian system of drills and the Indian broad-cast meth[illegible] of growing cotton, which *in Egypt gives a yield averaging* 500 lbs. [illegible] *and here in India only about one-sixth that quantity, and that of a* [illegible] *inferior quality.*

9. On the 6th and 7th June the young plants began to show, and [illegible] the latter date the first clearing of grass took place. Water was [illegible] given on the 9th and 17th as before described, care being always [illegible] that the depth between the drills did not exceed five inches, so as n[illegible] come too near the young plants, and on the latter date the second wee[illegible] took place also.

10. At Bahalgurh, on the 21st June, there were a few drops of r[illegible] but on the 26th it came down in torrents, and continued with little in[illegible] mission for four days. By this time the young plants were from fo[illegible] six inches above the ground; but this heavy rain quite submer[illegible] the field, and out of 730 groups of plants (they had not been thinned [illegible] this time) only 422 survived, that is, two-fifths of them were killed.

11. It was not till the 17th July I could visit this place on my t[illegible] of inspection, when I found those plants that survived averaged ab[illegible] eight inches high, one as much as 16 inches; when each group of pl[illegible] was thinned, only one plant left remaining, I tried to transplant those n[illegible] pulled up at the spots where the former ones had been killed, but failed i[illegible] every instance. As a precaution against this, however, fresh seeds w[illegible] put in also, which have sprung up: but, being so late in the season, th[illegible] yield of the latter will not be *one-tenth* of those which survived the floodi[illegible] by the heavy rain-fall at the end of June. With the exception of a fe[illegible] light showers on the 9th of July, from the 2nd of the month till the 17th there was no rain at Bahalgurh, where on this latter date there was [illegible]

smart fall, and the land being low, the water stood in some places from two to three inches above the top of the drills, but this was soon drained off, and the following day all was absorbed, so no injury was done; on this subject I propose making some remarks further on.

12. I again visited Bahalgurh on the 12th September, when I found a great change, some of the plants being over 6½ feet high, one covering an area of nearly 15 square feet, of which I informed you in a private note; and I am happy on this my present inspection to find that several have attained a height of 7½ feet, and two or three covering over 20 square feet, while by the weight of the pods many of the branches are bent downwards, some nearly reaching the ground.

13. Along with this report I send by rail one of the plants entire, that you may see how cotton grown from *native* seed can flourish if sown according to the Egyptian plan. This plant is by no means an exceptional one, for there are several much better, but it is rather above than below the average, and was selected as being easily removed without much disturbing those near it. This plant now sent measured six feet three inches above ground, and the "tap" root was 8 inches, but evidently interrupted (by its crooked appearance) in its downward course by the ploughing not being deep enough. The main stem has given off 18 branches, large and small, and on these branches were counted 226 seed pods and blossoms in various states of advance, but probably the average will be about 150 (one even exceeds 300), so the sample is rather above than below the average, as before said.

14. By post I also send you some cotton, uncleaned, which is the yield of 100 pods, which in all weighed equal to the weight of 15 rupees, or six ounces; and by a trial made yesterday I found that on cleaning 318 rupees weight of cotton, the result was 101 of clean cotton, and 217 of seed, or 31½ per cent., very nearly one-third to two-thirds, so the sample now sent should yield nearly two ounces of clean cotton.

15. It may be observed that the seed is mixed, such as it came from the bazaar, and out of these 100 pods, 40 of them bore four lobes, and 60 of them only three to each pod. I also counted how many were affected by the grub worm, and I found 20 of them had been attacked, the larger proportion among the four-lobed pods. The natives say that an easterly wind brings these insects, and that if there be a few days of westerly

wind they die, and do not appear in the pods that begin to ripen w westerly winds, but again make their appearance when the wind is f the east. I mention these little matters as they may be of after us discovering not only the cause, but also the remedy against this at a future time.

16. To continue. On the 12th July there was a third clearance grass, and in August twice, again once in September, or in all six ti while there was one more watering on the 25th September, and a last the 2nd October; so that in all there have been four ploughings, six clearances, and six waterings.

The expenditure on this experiment up to the present has been—

	Rs.	A.	P.
On ploughing	2	0	0
„ manure	1	0	0
„ watering	5	0	0
„ clearing grass	1	8	0
Total	9	8	0

and this on only one-eighth of an acre, or nearly Rs. 80 an acre, free f land-rent or supervision charges. Had the experiment been on a lar scale, the rate would have been very much reduced, and to the cultiva probably one-fourth would have covered all; but in an experiment of th nature I consider the expenditure very moderate, as in this case one p not for the work done, but for the *time* the laborers are kept away fr other work. The funds paid out being private, I gave orders that payments should be liberal, so there might be no complaint of sho payment made to me.

17. In practice the grass clearances cost the farmers little nothing, as all goes as green fodder to the cattle; again, the water-ra about equals ten times the charge for canal water, so the above must no account be taken as an indication of the cost of cultivating by th Egyptian system. Even taking it thus, I believe if the produce were so in the market, it would meet all the expenditure; for if the yield equ 80 seers, as expected, it would now sell for over 12 rupees.

18. Before closing this branch of the subject, it should be stated that in addition to the ravages of the grub worm, there are also birds and animals to guard against. What between sparrows and parrots, squirrels and rats, the "chokeedar" (watchman) has enough to do. Up to the present some 10 rats, and over twice that number of squirrels, have been killed, but as other fields ripen, the temptation to come to mine, which was in advance of the neighbouring ones, will become less it is hoped.

19. Having now gone fully into all that has been done and the results, so far as we can yet see, I may here state that my reason for submitting this report now, before we know the actual yield, is that in a few days I shall have to officiate for the Superintending Engineer of the Circle, and may not again have an opportunity to prepare so full and detailed a report. For the present, therefore, I can only speak of the estimated yield, which the natives expect to be 30 seers of clean cotton, and, judging from the small experiment before referred to, is not probably far out, for if each plant only produces 100 ripe pods, and they produce two ounces of clean cotton, we have—

420 plants yielding 840 ounces, and
300 ,, yielding one-tenth or 60 ounces,

or in all 900 ounces, which equals over 56 lbs., or very near 30 seers; so the native estimate is not far out, I believe, which, if correct, gives an out-turn of little short of 500 lbs. an acre. But even half this result for a first trial, where *no particular care has been taken*, nor the soil particularly good, holds out encouraging prospects for the future. But what do the natives think of it?

20. All who have come to see the field admit that having the plant growing in drills is a great advantage, as it enables them the more easily to water the land and clear away the grass and weeds, as well as facilitating the picking of the ripe cotton without much disturbing the plants. In addition to this it enables them to sow a cold-weather crop, wheat or barley, with greater facility between the drills, so the labor expended in forming the drills is more than compensated by the above advantages, not to speak of the quantity of seed saved. On the above points all appear to agree, but as to the seed used, the majority say that the whole thing is an imposition, for native seed could never produce such plants, and that I brought the seed from the "wilayat." Only the people in the neighbour-

hood, who know that it was purchased in the bazar, admit that th[illegible] used was native, and they say that they will try this drill system the[illegible] next year. The shortness of the fibre, however, at once proves thi[illegible] and I used native seed on purpose so that the poorest cultivator m[illegible] able to try this plan himself. The question to establish at present i[illegible] *quality* but *quantity*; once convince the cultivators that with a littl[illegible] they can double or quadruple the yield, and they will then be al[illegible] more ready to listen to advice about improving the quality; for wit[illegible] agricultural community in all countries, and in India in particular, [illegible] must creep before we attempt to walk."

21. I confess myself I was not prepared for such a favorable r[illegible] as this experiment promises, and the Sub-Overseer, as well as the C[illegible] thought I had ruined all when I ordered every plant to be pulled up [illegible] leaving one at every two feet. The yield, I think, would hav[illegible] improved, had I ordered none of the plants to be allowed to exce[illegible] feet in height, for this has been tried with several plants with [illegible] results; so I would suggest that in future experiments an order sho[illegible] given that the plant should be cropped, not allowing any plant to g[illegible] higher than a man's chin, which is a simple order that the most ign[illegible] can understand. The furrows also, I think, should not be less than [illegible] inches, and the ploughing as deep as possible. Had I ordered this [illegible] to have been dug by the "phourah" to a depth of eight inches or s[illegible] doubt the yield would have been still greater, and the expense very l[illegible] more than ploughing such a small area; but this would have vitiated [illegible] experiment, as digging could not be carried out by cultivators in gen[illegible] so I had to content myself with the present mode of scratching the gro[illegible] as it can hardly be called ploughing. The heaping up of the soi[illegible] furrows in a measure assists to meet this difficulty, for in Egypt, so fa[illegible] I could observe, they are not much in advance of us out here in [illegible] respect, for in passing through Egypt one may see donkeys and dro[illegible] daries, buffaloes and bullocks, yoked promiscuously, all dragging [illegible] plough, a camel with a bullock, or a bullock with a buffalo.

22. I now venture to make a few general remarks, and will tr[illegible] give some reasons *why* such favorable results are obtained from [illegible] Egyptian drill system in comparison with the broad-cast system in f[illegible] out here, where we have the same light, heat, moisture, and also, I beli[illegible]

soil, for the plains of Upper India are formed from alluvial deposits as well as the land of Egypt.*

23. First, the cotton plant is a sun flower and requires *light*, which necessitates plenty of space, and that it should not be in the shade. This is evident in the present experiment; for in the compound there is a large Peepul tree, and the plants in its vicinity do not thrive so well as the others; also the few plants behind the out-offices do not get the afternoon sun so well as the others, and are not so vigorous as those which have the sun all day.

24. Second, space for the roots to spread. This is evident by observing the roots of the plant now sent and before referred to; for it will be observed that the strongest shoots are given off very near the surface to the depth that the soil had been turned up by ploughing, while those which did force their way lower down through the stiff soil are twisted and contorted. With shallow ploughing, therefore, all the more space for the roots is requisite, to enable them to spread out and convey away nourishment to the plant.

25. Lastly, and most important of all, is the improved system of irrigation combined with drainage. This opens some interesting points which I shall attempt to discuss at some length.

26. First of all it is evident that it is an easy matter with a little care to run water between the drills, and to regulate the depth so as not to be less than three inches or more than five inches; thus the water can never come in contact with the stem of the plant. Again, in the case of heavy rain, though during the fall, and perhaps for a few hours longer, the water may inundate the field, yet it is *fresh*, and probably in motion, in which case it is supposed water cannot do injury to vegetation unless at excessive velocities. In fact it is to the overflow of many of our rivers that the fertility of the land in many localities is attributed, as for example, the Tehseel lands of Duska, in the Sealkote District—it is to the overflow of the "Aik," which brings down very little sand, but chiefly fine soil, that the richness of the crops is chiefly due. Flowing water, therefore, even though it comes from the neighbourhood, and scarcely contains any matter held in suspension, is a different substance to water that is

* Speaking of soils, I believe much good would result if a branch of the Geological Survey was deputed to report on the soils. A correct knowledge of their various constituent parts would lead to knowing how to mix them, and thus greatly improve agriculture.

stagnant in its chemical properties, as well as its mechanical ones. A any zemindar and he will tell you that fresh rain-water, so long a does not submerge the plant, and thus drown it, does no harm so lo *the sky is cloudy, but let once the clouds clear away, and the direct ra the sun descend on the water which is not flowing, and it at once be injurious to almost all plants,*—rice probably being an exception.

27. This opens the interesting question—What is the effect of li on water in combination with heat, and how are the chemical properti the water thus changed, which it could not effect when partially dep of the light, though the temperature was all along very hot? Be it it may, there remains this important and well established fact, tha water does undergo some change that makes it injurious to vegeta except that which is rank; and is not this the reason why, even at hom a comparatively cool climate, garden flowers and the like are water the afternoon rather than in the morning or mid-day?

If such be the deleterious effect of light on water which come direct contact with some plants, does it not show a wise provisio nature that the light of the sun is always impaired when she waters ground, and does not this teach us a lesson that we out here in In should try to irrigate our fields in the afternoon and at night rather th during mid-day? And may not this be the reason why, in the cas crops irrigated by canal water, the grain, though equal in every ot respect, is considered by the natives not so nourishing? This sub opens a field for extended inquiries, but I must pass on to another m important law of nature.

28. Earth at all times has been known as the great absorber a decomposer of that which otherwise would become prejudicial to an or vegetable life, so does not the whole secret lie in this little fact w the Egyptian mode of cultivating cotton is so superior to ours in In namely, that no stagnant water that has been decomposed by the ligh the sun can come in *direct contact with the plant, but must first pass thr the universal chemical agent earth,* and thus be converted into a fit s for the plant to drink up the purified water. In this I believe lies whole germ of the question, and to my mind explains why we should such great differences in the out-turn of cotton in Egypt and India.

29. I have perhaps dwelt at too great length on these questions; but considering the great interests they affect, both here and at home, I trust my remarks will not be considered without some value in assisting to further the great object in view, namely, improved agriculture in India.

30. In conclusion, I regret I have been as yet unable to give a photograph of the cotton field as it at the present moment appears, but I may be able shortly to do so. Great care is being taken to know the actual yield, which at present promises to be satisfactory; but as soon as the crop has been all collected, an accurate statement will be submitted.

31. Such success having up to the present (with one exception) attended the experiment, I would respectfully suggest that similar ones may be tried at all chowkees in the province where water is procurable, and that the zemindars in the neighbourhood be invited to see every thing from first to last. By so doing the Egyptian system of growing cotton will soon come to be generally understood, and believed in, when we may look forward with confidence to a general advance in this important branch of industry, and India will be able to hold her own in the cotton markets of Europe.

No. 6610, *dated* 12*th November* 1870.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Panjab, to Colonel R. Maclagan, R. E., Secretary to Government Panjab, Public Works Department.

I am directed to return the enclosures of your No. 5418 of 3rd November.

2. Mr. Login's report is most valuable, and his experiment appears to have been very successful. The Financial Commissioner awaits with interest the return of the actual yield promised in para. 30. The chief features of the experiment were:—The area sown was ½ of an acre; the soil was manured; the seed was dibbled; the crop was weeded six times. There were four ploughings and six waterings; the plants were thinned; the ground was irrigated with canal water.*

3. All these circumstances show that an unusual amount of care was bestowed on the culture of the plant. It is unfortunate that the exact description of the seed used was not ascertained; for although it was

* Not canal water, it would appear from Mr. Login's para. 17.

bought in the bazaar, this does not prove for certain that it was comm native seed. Still, allowing that the circumstances were not those wi occur in ordinary cultivation, there are fair grounds for believing that system of sowing in ridges, of dibbling the seed, of thinning the pla and of keeping the water from the stems of the plant, is likely t successful where means of irrigating the cotton plant exist.

4. The system appears adapted only for places where artifical irr tion is available.

5. Mr. Login mentions in para. 19 that, owing to his being to officiate as Superintending Engineer, he may not again have portunity to prepare a full and detailed report. The Financial C missioner trusts, however, that he will be able to take measures f careful collection of the remainder of the crop, and for an accurate of the out-turn, as the value of the experiment will depend greatly In the meantime it is to be hoped that the actual yield will come Mr. Login's expectations, for in that case he will have rendered service to the cause of agriculture in this Province in establishi practicability of obtaining, by a comparatively simple process, a y cleaned cotton hitherto unprecedented.

From T. Login, Esquire, C. E., Officiating Superintending Engineer 2nd C Panjab, to Colonel R. Maclagan, R. E., Secretary to Government P Public Works Department, dated 25th November 1870.

I herewith have the honor to forward two photographs of my perimental cotton field at Bahalgurh, and to request that they appended to my report dated 21st October 1870, on the Egyptian s of growing cotton.

2. These photographs, I think, speak for themselves, and, wi aid of a strong magnifying glass, a better idea can be formed of the of this experimental field than any report could effect. The fo shows that during the first of the three months that the cotton gathered in the yield during this short period already exceeds the a produce from fields cultivated according to the native mode from three-fold.

3. The next two months the results shall be duly communicated, and I trust the yield will continue to be as favorable; so it appears probable that the ultimate result will equal 500 lbs. of clean cotton per acre, as estimated in my report.

4. Along with this I also beg to append to my report a free abstract of it, written in the Vernacular of this part of India and the North-Western Provinces. I have dwelt chiefly on the main points to be observed in carrying out the Egyptian system, and have tried to express myself in as plain language as possible; so that it is hoped all can understand what is requisite even down to the "kaskar," or ploughman. All the weights and measures are stated in the usual manner adopted by the cultivators in calculating the yield of their fields, taking the Government pucca beegah at ⅝ths of an English acre, and the kucha beegah equal to ⅓rd of a pucca one, while the seer equals 80 tolahs, or 2 lbs.

5. In different parts of the Panjab probably it will with advantage be better to retranslate this vernacular paper into the usual "bolee" of the District, and the weights and measures may in some cases be recalculated and converted into what is most in use in that particular District; but this, I think, is an easy matter for an intelligent "Putwaree" even to accomplish.

6. My object in forwarding the vernacular paper is, because I feel that after all it is not an English report that can instruct the chief parties interested in this matter, but a paper, such as this now forwarded, which expresses in simple language the chief matters to be attended to by the cultivators.

7. Should this abstract be approved of, I beg that it be printed and circulated among the zemindars through the District Officers at an early date, for I believe it is the habit among the cultivators to determine what crop is to be raised long before the sowing season arrives; so that a few zemindars may be induced to give this Egyptian system a trial, it is desirable that the subject be made generally known and discussed by them some months before sowing season arrives. I trust therefore that the information now communicated will warrant steps being taken to have both the English and Vernacular reports printed.

From T. Login, Esquire, C. E., F. R. S. E., Officiating Superinten Engineer 2nd Circle Panjab, to Colonel R. Maclagan, R. E., Secret to Government Panjab, Public Works Department, dated 22nd Decem 1870.

During my inspection tour of the 7th Division Grand Trunk Ro I had an opportunity of visiting my small experimental cotton field Bahalgurh on the 20th instant, and I found that the yield of "Kap was 1 maund, 15 seers, and 1 chittak, of which over half a hundred wei having been cleaned was all weighed in my presence. I found that th was 69·10 per cent. of seed, and of clean cotton 30·90 per cent.

This is 0·60 per cent. less than my first trial, but it is easily accoun for, as in the first case the seeds were twice passed through " churkhee," and in the second instance only once. The proportion of cl cotton therefore may be safely taken at 31 per cent. and 69 per cent seed, which would give a yield per acre of 273½ lbs., as the yield is only of an acre.

Judging by the present appearance of the yield, I hardly think shall get over ⅓rd more, or say 360 lbs. per acre; but it must be born mind that two-fifths of the plants were destroyed by flooding early in season, which might have been avoided had the drainage been more p at first. But for this the yield would probably have been at the rate of or 600 lbs. per acre.

On the whole, however, the success which has attended this experiment is so encouraging, that I have tried this *furrow* system small wheat field measuring 150 feet long by 50 feet broad, which prom well also.

The arrangement which Sub-Overseer Zoolfikar Ali has made in case is to have the experimental field in the midst of other wheat fie and the agreement is that the zemindar has ploughed, manured and waters the field at his own expense, I only making the furrows and putt in the seed. I agreeing also to make good the loss should there be any.

The furrows in the present case are only two feet apart, and a sin grain of wheat (selected seed) is put in at every 18 inches. The cost doing this amounted to the rate of one rupee five annas for nine kuc beegahs, or only 11 annas, 6 pie, per acre, while for seed alone by

native broad-cast system 10 seers of seed are used for each kucha beegah; so, as the price of wheat is 18 seers per rupee, the cost of seed would be Rs. 5-8-11, or a saving by this new system of Rs. 2-4-2½ per acre, simply from the saving of grain.

The seed was sown late last month, but on the 21st instant all had sprung up and appeared promising, and already several stalks from the same root were appearing above ground at another small patch sown earlier last month.

If similar experiments were carried out, the villagers would soon learn the value of this mode of cultivation; and surely all Tehseeldars and Zillahdars have sufficient influence to make such trials at every village in the country. If at the same time they were made to know that their future promotion quite as much depended on the increased produce of the land as it did on increased revenue, I have little doubt but we would soon see a rapid advance in the improved agriculture of India.

From T. Login, Esquire, C. E., F. R. S. E., Officiating Superintending Engineer 2nd Circle Panjab, to Colonel R. Maclagan, R. E., Secretary to Government Panjab, Public Works Department, dated 21st January 1871.

The undersigned has the honor to report that he has just learned that the total yield of "Kapas," since he last reported on the 22nd ultimo, up to the 16th instant, was only 7 seers, 1 chitak.

2. This brings up the total rate of yield to 307½ lbs. of clean cotton per acre, and from the report received not over 10 lbs. more is expected.*

3. The falling off of the expected yield is probably owing to the late frost; yet considering that two-fifth of the plants were killed early in the season by flooding, to get at the rate of over 300 lbs. per acre, it is hoped, cannot but be looked on as satisfactory for the first experiment, and Mr. Login firmly believes that with care, by adopting this Egyptian system, that the yield of our cotton fields in Upper India, where water is procurable, can, without any extra outlay, be doubled, if not quadrupled.

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* Formerly collected, up to 21st December 1870, per acre, ... 273½ lbs.
Now collected, 7 seers, 1 chittak = 14 lbs. 2 oz. Kapas, 14 lbs. 2 oz. × 0·31 × 8 = 34 "

4. Regarding the wheat field referred to in the undersigned's le[tter] of the 22nd ultimo, the report sent is favorable, but the result of [the] experiment will be forwarded later in the season.

From T. Login, Esquire, C. E., F. R. S. E., to Colonel R. Maclagan, R.E., Secretary to Government Panjab, Public Works Department, da[ted] 20th February 1871.

I have the honor to report that the picking season for cotton is [n]ow over, and that, owing to the late frost, there has been no increase of yield from my experimental cotton field at Bahalgurh over that last rep[ort]ed, namely, at the rate of 307½ lbs. per acre of clean cotton, which is h[ow]ever somewhat below what I at one time expected, yet I hope the re[sult] will be considered satisfactory, as it is from four to five times the aver[age] yield in India.

I have to-day received a report, dated the 18th instant, showing [the] state of my small experimental wheat fields before referred to, a copy [of] which is herewith forwarded.

By this report it will be seen that growing wheat on furrows pro[mises] quite as satisfactory results as the cotton has given, and I have lat[ely] learned that in the Forest Department somewhat similar results have be[en] obtained.

Seeing, therefore, that whenever stagnant water cannot come in dir[ect] contact with the plant, it flourishes much better than where the water [is] spread all over the field, as the broad-cast system necessitates, I feel a[ll] the more convinced that the causes assigned in para. 26, 27 and 28 of [my] Report of the 21st October 1870, must be correct.

Report on field of wheat.

Locality.	No. of stalks one root has given.	Height.	REMARKS.
Smalka village ...	10 to 60	1 to 2½ feet.	In good state.
Lursowlee bungalow...	50 ,, 75	1 ,, 3 ,,	On one root there are 1[..] stalks. The wheat in [a] flourishing state; ears [of] corn coming out.
Alleepoor bungalow ...	4 ,, 60	1 ,, 3 ,,	State good; ears of corn co[m]ing out.

From T. Login, Esquire, Executive Engineer Delhi and Ambala Road, to Colonel A. Taylor, Secretary to Government Panjab, Public Works Department, dated 5th April 1871.

In continuation of my letters noted in the margin, I have the honor to forward a photograph of some wheat plants which shows more clearly than any report I could submit, the relative value of the Egyptian system of cultivation and the broad cast system.

Letters dated Delhi, 22nd December 1870.
Do. Ambala, 21st January 1871.
Do. Ambala, 20th February 1871.

2. Having already, in my report of the 21st October 1870, gone fully into the whole question, it does not appear necessary for me to say more than that the results now obtained by the furrow system promise very beneficial effects on agriculture, and I should like to see it tried on other descriptions of crops, such as sugar-cane, Indian corn, Jowar—*Impey R.*, as I believe they would lead to similar favorable results; but as up to the present the whole has been carried on at my personal expense, (*the cost has been about* Rs. *120*, including Photographs R.), I could not conveniently continue this.

Mr. Rivett Carnac, the Cotton Commissioner, asked me to appoint a time and place to meet his Senior Cotton Superintendent, Mr. Batcock, with the view of inspecting my experimental fields, and I am happy to say that Mr. Batcock has returned to Allahabad favorably impressed with what he saw, and is, I believe, quite as fully convinced of the advantages of this furrow system as I am. I therefore hope that early steps may be taken to give it a trial throughout all the districts of the Panjab, if possible, during the coming season now so close at hand.

No. XXXVIII.—ASSESSMENT OF CANAL IRRIGATED LANDS WITH WATER ADVANTAGE RATE.

Extract paras. 1 *and* 2 *of letter No.* 253, *dated* 24*th April* 1863, *from the Financial Commissioner Punjab, to Secretary to Government Punjab.*

No. 1976, dated 19th ultimo, from Director of Canals to Financial Commissioner.
No. 1097, dated 1st current, from Financial Commissioner to Settlement Commissioner.
No. 123 dated 8th idem, from Settlement Commissioner in reply.

I beg to forward, in original, for the consideration and orders of His Honor the Lieutenant Governor, the correspondence noted in the margin, regarding the discontinuance of canal irrigation by zemindars with the view of securing light assessments at the revised settlement, and to enquire whether Government is prepared to admit the principle that whatever enhancement of revenue shall be demanded in consequence of irrigation from the canal, shall be levied *exclusively* in the shape of water rent. It seems to me that this principle is the only just one, and if it be adopted, it seems desirable that it be avowed at once, in order to obviate the evil which Captain Dyas points out.

2. I believe that irrigation from wells may, with advantage, be treated on the same principle, but there is no urgent occasion at present for orders on this point, and I do not solicit any, as the subject is not yet ripe for disposal.

Extract paras. 1 *and* 2 *of a letter No.* 418, *dated* 12*th May* 1863, *from Assistant Secretary to Government, Punjab, to Financial Commissioner, Punjab.*

I am directed to reply as follows to your letter No. 253, dated the 24th ultimo, the original enclosures of which are returned herewith.

The Lieutenant Governor has also consulted Messrs. Cust and Forsyth on the subject of your communication, and all seem to be agreed on the propriety of the land revenue being assessed at unirrigated rates, and the enhanced demand in consequence of irrigation from the canal being levied in the shape of water rent. His Honor himself also concurs in this view, and authorizes the adoption of the principle accordingly. At the same time, however, it is necessary that the water rent rates should be enhanced, so that although the land revenue will be diminished, yet no loss may accrue to the Government by this change in the mode of settlement.

Copy of a letter No. 31 C, dated 6th July 1865, from the Chief Engineer Irrigation Works and Under-Secretary to the Government Punjab, to Financial Commissioner Punjab.

The jamas of the new land settlement at unirrigated rates in the Lahore and Amritsur Divisions being on the eve of publication (in some instances they have, it is understood, been already published) it becomes necessary to make some arrangement for realizing the portion of the aggregate Government demand relinquished by the change from irrigated to unirrigated rates, which will fall due in the interval which may elapse before the enhanced rates for the irrigation can be finally determined on.

2. To effect this, the Settlement Commissioner, Mr. E. A. Prinsep, proposes "that a rate be fixed over and above the present water rate, to be fixed now by (him) when (he) fixes the new jama, and engagements taken from zemindars that until the new enhanced (water) rate is generally introduced, they will pay at that rate for every acre they may choose to water".

To this proposition His Honor the Lieutenant Governor agrees, believing it to be the best, if not the only feasible arrangement under the circumstances. I have therefore the honor to request the favor of your issuing such orders as you may consider necessary to give effect to the arrangement by the time the new assessment comes into practical operation, forwarding at the same time a copy of such instructions, or such portion of them as affect the Irrigation Department, to this office.

Paper urging the desirability of assessing land watered by canals, on the principle of fixing a water-rate over and above existing rates paid for the use of water, being the plan introduced in Baree Doab Settlements by Mr. E. A. Prinsep, Settlement Commissioner, recorded in his No. 215 dated 20th April 186[illegible] to address of Financial Commissioner Punjab.

I have to acknowledge receipt of your No. 629, dated 8th February, and its enclosures, from Government of India and from the Secretary to Government Punjab, regarding the mode in which the indirect benefits, or increase of assessment, resulting from canal irrigation are to be dealt with; and calling upon me to give effect to the principle laid down by the Governor General in Council in all future revisions of settlement now being conducted.

2. As regards the districts of Amritsur Division, where the new assessments have been given out, I am directed to revise the arrangements made on another principle.

3. Now that I have returned to Amritsur from my tour of inspection, I am ready to take up this duty. It requires me simply to go over the ground again in perhaps no less than 1,500 villages in two districts of Amritsur and Gurdaspur, where the assessments have been fixed on land *entirely in an unirrigated aspect ;* the increased fertility due to the canal being left out of account, till such steps had been taken by Canal Department to introduce generally the enhanced water-rates, which for some time back it has been proposed to bring into operation. I left the increase of assessment to be dealt with when these rates were fixed, as it was most important that the two enquiries should take place at one and the same time ; for the enhancement, whether taken by Canal Officers in the shape of an increased water-rate or fixed by Settlement Officers in the shape of an increased amount of revenue, could only be demanded from that margin of enhanced profits which can be defined by the term "water rent" profits ; and being drawn from one and the same source by two distinct operations, it was absolutely necessary that the fixation of new water-rates and water revenue rates should be done simultaneously, and under arrangements mutually understood by both Canal and Settlement Departments.

4. I must premise here that by order received in His Honor the Lieutenant Governor's No. 418 dated 12th May 1863, to your address, the principle of assessing all lands *as unirrigated,* and fixing separate and enhanced water-rates for increased productiveness caused by the canal, was duly affirmed.

5. Again, in the reference made by me, a reply, No. 31*C*, dated 6th July 1865, was elicited from Chief Engineer, Irrigation Works, to your address, in which the extension of this principle was approved, as suggested by me, "that a rate be fixed over and above the present water-rate, to be made out (now) when he (Settlement Officer) fixes the new jama, and engagements be taken from zemindars that, until the new enhanced (water) rates are generally introduced, they will pay at that rate for every acre they may choose to irrigate." His Honor the Lieutenant Governor "believed this to be the best, if not the only feasible arrangement under the circumstances," and directed it to be carried out.

6. Wherever then it was ascertained that at last Settlement, Mr. Davies had assessed the increased profits due to the canal then in existence, as a part of the land revenue, the proportion discovered to be due to the canal was converted into a *rate per acre;* and at time of announcement of new jamas it was duly given out and entered in the engagements, that this additional rate was to be paid for every acre of land watered, over and above existing canal water-rates; at any rate, until such time as enhanced rates were generally introduced, or further orders were issued.

7. However, it is proper to explain that this arrangement has in Amritsur and Gurdaspur districts only been carried out in those estates which *were watered from Huslee Canal;* for it was in these alone that at last settlement any water was taken; and Mr. Davies included both under one jama, *viz.*, that revenue due to land and that to water: the Baree Doab Canal not being then open in any portion of its length or channels.

8. Since that settlement, of course most of the villages have received water from the Baree Doab Main Canal and its branches. At the utmost irrigation from this new source has only had an existence of from 4 to 6 years in Gurdaspur, and 1 to 4 years in Amritsur. It occurred to me, then, not to fix the extra rate for these villages till the new enhanced water-rates which the Canal Department had under consideration, and I believe, are still considering, had been brought out; for it is manifest (as explained above) that the Settlement Officer must have full regard to what is going to be taken as a canal water rate, before measures can be taken to adopt those rates, or the proportion of the net assets which the extra margin of profits due to water alone affords.

9. This will explain why I have resorted to two different modes of assessing; on the Huslee villages fixing the additional rate, because the jama had to be reduced to the unirrigated aspect, (and it was not right to surrender whatever amount of the old jama was, as it were, chargeable to the canal and previously paid into treasury); while in all other irrigated estates, water had only recently been taken; the irrigation system had scarcely become matured (in many villages had only just begun); and even the arrangements of the Canal Officers were altogether in a transition state.

10. The course that has now to be taken will be two-fold:—

I. To collect at once, if not already collected, the extra jama by application of the additional rates fixed on the Huslee villages on the entire area

the year, as appears from the Canal Officer's papers. All these rates were fixed in the new kistbundees sent to Commissioner of Division, with the letters marginally noted, and Deputy Commissioners were requested to see that the extra revenue was collected on the Canal Officer's area returns, over and above the usual collections on the existing water rates of the Canal Department.

(1.) Settlement Commr's. No. 556, dated 15th Feby. 1866.
(2.) Ditto ditto No. 558, dated 19th ditto.

11. I learn from Mr. Egerton that from some oversight and misunderstanding on the part of the Canal authorities this extra revenue has not been collected. The amount is not large.

Pergunna Butala, ...	... Rs.	6,658
" Gurdaspur, ...	"	5,490
" Puthankote, ...	"	5,069
Total, ...	"	17,217

I reported what it would come to in para. 46 of my annual report for 1865-66. It will be seen that it was estimated to amount to Rs. 17,217 only.

There are only 131 villages in all, from which this has to be collected in the proportion of estates to each pergunna as marginally shown.

District.	*Pergunna.*	*Villages.*	*Total.*
Gurdaspur—	Puthankote, ...	33	
"	Gurdaspur, ...	44	
"	Butala, ...	53 =	130
Umritsur—	Ajnala, ...	1	1
	Total, ...		131

Mr. Egerton, however, now informs me, that he has issued orders for these additional rates to be applied on the area returns, and the revenue to be collected separate from Canal Officer's water rate jamas. When collected, it can be at once carried to credit of Land Revenue or Canal Department, as Punjab Government shall hereafter think fit to direct.

12. II.—The other step we have now to take, is to fix in every remaining village watered by *Baree Doab Canal*, not the additional rate, as under the principle previously followed and approved, but the amount of jama which represents half the net assets of the increased margin of profits due to Canal irrigation, which shall now be added to the unirrigated jama, and the two will in future form the enhanced Land Revenue in all these villages.

13. This comes to be a very serious enquiry; and as the principle laid down by Supreme Government has not been given in detail, before I take positive action in the way of announcing the new water jamas, I deem it right to take explicit instructions on each of the following points :—

First.—As to principles, which I wish to have enunciated, as though in the correspondence the system is defined to be the existing system, such defini-

tion may be applicable to North-Western Provinces, where the canals are older; but up here the new canal has only very recently been opened. The enforcement of the system is one altogether new up in these parts, and we have a *tabula rasa*.

Second.—As to the agency by which this should now be done.

14. As regards the first I wish to be informed—(1) Whether it would not be desirable to fix the enhanced jama more in the form of a rate per acre for each village, than simply a round amount short of revenue rate jama for water at half net asset rate? The object of this suggestion being this, that if His Honor the Lieutenant Governor should wish to make any reference to Government of India, and any alteration be eventually allowed—from the principle at present enjoined, it will at any time be easy to revive the acreage rate plan in separating (1) what shall be for the *use of canal water*, and (2) what for the *additional productive advantages*. If such separate considerations are not now elicited and in form of rates, quite apart from the land revenue already announced, there is a fear that hereafter it will be extremely difficult to separate the two aspects on the water side.

15. (2.)—Whether the *existing canal water rates* * are to stand as they are, or are they to be enhanced?

16. (3.)—If not, whether the new canal water rates * are to be permanent for the term of new settlement, or are liable to fluctuation hereafter even within the period for which settlement is to be given.

17. (4.)—Whether there are to be different canal rates * for crops of different kinds, constant when fixed for the whole length of the Doab, or varying again in degree within defined territorial limits; such as in Gurdaspur district one set of rates; Amritsur district another; Lahore and Chooneean somewhat lower rates, owing to the uncertainty of supply in water.

Before I can move one step in my enquiries, I must know these rates, and the terms on which they will be fixed; for the people are sure to enquire what I announce, and if they are not taken into account in that consideration of the increased gross income created by increased productiveness, how can I deduct the net rental properly, out of which the extra one-half assets are to be imposed, and from which again, or above which, so much is to be set ap[art]

* By canal water rates are meant, throughout this report, the rates taken by C[anal] Department for the *use of the water*.

as the margin for present canal rates (or for canal rates in future likely to be taken) and so much for the land revenue under the principle enjoined by His Excellency in Council in the improved productive aspect.

18. (5.)—Then I wish distinctly to be informed whether the present canal water rate, or the enhanced one, which is, or is about to be, fixed by that Department for *the use of the water*, is to be taken into consideration in the half net asset margin of profit taken as the share of Government, or to be excluded as payable from the landowner's half share. It is important that I should know this before I deduce what shall form the fair proportion of new jama on the land revenue side. Or is this canal rate and its value to be deducted as an agricultural charge from *both shares*, Government and land-owner, and being so deduced of the remainder Government is to take half and land-owner half? The whole question is a new one up here, and general principles such as these must be enunciated.

19. (6.)—If we do not take into account existing canal water rates, or what Canal Officers are likely to put on, is there not a great fear of over-taxing the villages, from the double process of enhanced land revenue—settled on the district side now, and the imposition of existing or enhanced water rates the Canal Officers may now or hereafter demand.

20. (7.)—If the two processes are done once and for all now, how is this to be done? Are Settlement and Canal Officers to work it out together, or the former quite independent of the latter? I foresee much trouble, complaint, and even refusal to accept Settlement Officer's data, unless both Departments work together.

21. (8.)—Again, how is unequal taxation to be provided against? A village has 200 acres irrigated now, and we assess say even by double process, but it is presumed this is to be done *on area at present watered*; six years hence some villages may be watering 400 acres, the Canal Department being allowed to take only a mere use of the water rate; how will this increased area ever be rated uniformly, either in its aspect of *taxes to the State* or of village interest? How is the internal rating in the villages to be adjusted? Government having made its settlement now, cannot put on a demand *during the term of a settlement* for share of improved assets on increased watered area? How very unequal then will be the taxation all over the country, even to extent of villages side by side, and fields of two brothers side by side: one of whom happens to irrigate now, the other perhaps two years hence! what loss to Government! what disturbance of yearly internal rating (*Bach.*)!

Granted that Government is ready to give up this increase of canal revenue for a term of settlement, but how about the village rating? Is that to be settled every year there is a decrease or increase of area under water? Where is the agency to make up yearly papers? The village representatives will never be able to do it; the Patwaris, if left alone, would create mischief; Tahsildars have not the time to do it. If *village rating is to change every year* the good of a settlement for a fixed period is frustrated; complaints will become very frequent; and our Revenue Officers' time will be distracted by adjustment of water quotas of each year's demand.

The questions I wish to put then, under this head, are :—

(*a.*) Is any prospect to be held out to the people of adjustment of unequal taxation? Are those who taking water now and are rated for the same, to be always the rate payers of that quota;

(*b.*) Or, as watered area increases from year to year, is the water revenue jama now fixed for (20) *twenty years on present area*, to be liable to adjustment on fluctuating areas of each year, in order to afford equal taxation within villages? In other words, is village rating liable to change, and if so, are new khewuts to be prepared every year?

22. (9.)—Again, if there are differential rates of any kind for crops or territorial divisions fixed by Canal Department, or by Settlement Department, wherefrom to deduce the water revenue jama, is a separate operation to be gone through to arrive at water revenue rate for each crop, soil, rajbaha? Even supposing this is done, now once and for all for 20 years, so far as the Government demand is to be eliminated, how about future yearly imposition of water rate by Canal Department or what about the village rating? Are these to be altered every year and adjusted on each rate payer's fields, with reference to the crop, soil, or position in respect to vicinity to or distance from rajbaha? I am not raising questions merely to add to the difficulties, but this very question has been put to me by parties interested. They say the enquiry involved by such yearly changes will be attended with most mischievous results, and be destructive of all the advantages of a settlement for any term however short or long, or permanent in character.

23. (10.) Then comes the question, and it is a most important one, which must be explained from the outset to the people,—are zemindars obliged to engage to pay the water revenue jama? Is *payment inevitable*

optional on water being taken ? Suppose the canal is closed, or supply of water fails, (this is occurring every day, and remissions of canal water rate are constantly being given by canal officers to prevent loss,) and the water revenue jama is fixed for 20 years, people object and enquire whether the obligation to give water and (failing water remissions) is as equally binding on the State as payment of enhanced jama, now fixed for 20 years, is binding on zemindars? If there is no option as to taking water hereafter, and payment is obligatory without corresponding obligation of remission on part of Government, I very much fear, when we come to announce this, there will be universal dissatisfaction in a new country like the Punjab. Indeed, it is already feared that the very announcement may induce some villages to decline to engage on these conditions altogether, either for water revenue, or the land revenue jama previously accepted. Orders of Government are accordingly required, for Settlement Officers must be ready to meet any question put on this head at time of announcing jama.

24. (11.) If refusals are made to take up jama on these conditions, what course is to be adopted ? It would be better in my opinion to record a declaratory proceeding, that for the term of settlement such a village is not to have any water at all, or mischief will arise.

25. (12.) If a village *does* agree to engage, and hereafter there is a loss of water owing to canal failing in its supply of water, by whom is it to be borne in the village rating? By the whole community jointly? By such as have taken water for that year, the joint interest applying to all alike? Or by individual rate-payers in the proportion of water they have been known to have taken? By what agency is this to be determined, and how is a dispute on such points to be decided hereafter by the Court ?

* * * * * *

27. (13.) Again, if remissions may be given hereafter, who are to give them, the Canal or District Officer? If both together, it may work; if separately, where is there any guarantee against collision or mistakes of accounts; perhaps one officer may remit water revenue, the other decline to remit canal water-rate, and here confusion and conflict would arise.

Would it not, on this account then, be better to make out two revenue rates for the two new jamas, one shewing the unirrigated as already fixed and announced, the other the canal irrigated? If not, when remissions have to be made hereafter, how is Deputy Commissioner to know how much he

has to remit; particularly if differential rating on crops has to be applied a principle of assessment.

28. The above points all need to be cleared up, and principles enunciated; for without them it is extremely difficult to make the zemin comprehend the present arrangement of Government, and why they called upon to pay taxation twice, as it were, in the water aspect.

29. I now pass on to the *second* head: the agency to be employed.

I wish to know if some Canal Officer cannot be deputed at once confer with me on these arrangements. The condition of every village have to be considered, each on its own merits: the area irrigated—quality produce perhaps divided in 3 or 4 chief classes—the number of years has been taken—and the general ability of people to pay full, or pa demand. Nobody can give better information on such points than Canal Officers; and it is of the greatest importance that some such of should co-operate and represent the canal interest.

30. If the option is allowed me to select, I should prefer Mr. E. Pa for many reasons, as he has already taken, I may say, the greatest interes all that has been done in this settlement; has been forward in adapting field-maps to the wants of his Department—a measure which he is carry out with much success—and has otherwise evinced a desire to render ev help, when help was demanded; and this serious enquiry we are about enter upon is one that will need much research, indulgence, and readines adapt arrangements to whatever the circumstances of each village may dema at our hands.

31. Mr. Palmer will represent then the canal interest. On the p of the settlement, as I cannot call away any English officer, and the serv of no other officers are available, I propose to depute Extra Assistant Co missioner Gopal Dass to help me in collecting the materials. I have sum moned him from Goojranwalla, and he will begin work on Saturday. request your sanction to his being employed in this way with a small esta lishment of four Mohurrirs on Rs. 20 each, who can be paid from settle ment fees, supplemented by the Canoongoe of each Pergunah (as we tak it up), and this is agreed to by the Commissioner of the Division.

32. This officer will collect and arrange the data, have it translated into the village note books, compare it with canal returns, and when the data is ready, it will not take me long to assess the villages of four Pergunahs

previously settled by myself personally; while Mr. Lyall could review the jama of two Pergunahs, Puthankote and Gurdaspur—which he originally settled.

33. In this way I trust in two months to be able to complete this enquiry, and report the results; for there are a large number of villages watered by Baree Doab Canal and its branches in which, I have stated above, this assessment of canal rate or jama has yet to be carried out. Under any circumstances, I expect in one quarter to do all that is needed in the way of obeying the orders conveyed in your letter.

34. At the same time, I will not conceal from Government that I disagree entirely from the view now enunciated on this question. I consider this step we are taking is full of complications, the extent of which one day will become apparent, and the consequences of which we shall probably regret.

35. The arrangements we had set on foot with the approval of His Honor the Lieutenant Governor, on the principles mentioned in paras. 4, 5, and 6 above, were working very well. There would have been no surrender of existing Government revenue, for we have a *tabula rasa* to deal with. There could have been no *future loss*, inasmuch as it was proposed to have *an additional rate over and above canal water rates*, which should be constant for the term of settlement; *and being a rate, would be taken for every acre irrigated*, so that if water was not taken, neither the former nor the additional rate would be demanded, and thus every complication above described would be obviated. While on the other hand, as the area of irrigation increased from year to year, an additional and increasing revenue would certainly come into the treasury, which could have been credited to Canal Department, or to the land revenue collections, without the least trouble, without any further interference than is required to collect the ordinary water-rate, with uniformity in the incidence of taxation maintained at time of assessment, and always carried on from year to year, without complaint, hardship, or any uncertainty whatever.

36. I am still of opinion that this is the right principle, and just both to the people and the State, and free from any one of the objections and difficulties I foresee will threaten us at every turn, and in the end may lead to impoverishment of some estates, and inordinate prosperity in others, if the change now enjoined is to be carried out.

* * * * * *

38. The main arguments by which the Secretary of State seems to have been influenced are these—

I. That the principle laid down by Mr. Muir and His Excellency in Council is, after all, only that which "exists under the present system." This is not the case up here, for we have a clear field to do exactly what is best in principle and safest in practice.

II. That, quoting from the Resolution of His Honor the Lieutenant Governor North-Western Provinces, of the 30th June 1865, the present system is one which is "the matured result of the experience of many years and is well understood both by officers of Government and by the people." This is not the case up here where the canal system is of only recent creation, has only been six years in anything like open operation, and is not matured. Nearly every officer is against the amalgamation principle, and sees in the additional water-rate system a way out of every difficulty, impartial, allowing of every liberty of action both to State and people, permitting of equal taxation to all alike, and promising to give a much larger return from canal revenue, and so to shew that canal undertakings have every chance of returning a good interest for capital employed in the same; while officers and people would indisputably prefer the plan that does not restrict or complicate existing interests, and bids fair to be free of all causes for litigation hereafter.

39. III. That it would be "*incompatible with the idea of a permanent* "*settlement* to insert conditions in the Sanad under which all lands hereafter "brought under irrigation should be subjected to the same acreage rate as "those already irrigated," is an argument which is easily removed, and scarcely applies to the Punjab, where, owing to the canal system being new *and water having been taken only from* 3 *to* 6 *years* in most villages, there are few estates which have as yet advanced even up to extent of having 20 or 30 per cent of their area irrigated by any of the canals; so that for a very long time, at least till the next settlement, none of the villages in Baree Doab can be considered to be in any way fit for a *permanent settlement of the canal demand*. For this term of settlement then, extending to 20 years probably, there can be no objection whatever to fixing a constant additional rate for such period. At the expiry of that term if there *are* estates so advanced as to have 50, 60 or 80 per cent of the cultivated area under the full influence of the canals, entitling them to the privileges of this despatch of the Secretary of State,

then it may be said that the above objections might apply. But certainly, taking the facts as we find them in these days, this reason can hardly be allowed to be tenable.

40. I would now like to bring under your attention this important point. By the system laid down for guidance, *future canal revenue is being sacrificed for 20 years, and that on a canal where everything has to be matured.* For the last six years, I am informed, the utmost the Baree Doab Canal has returned in shape of interest is 0·8, or about 12 annas, per cent. The revenue derived from water-rate realizable from year to year will increase no doubt ; but I ask you to reflect how much in excess would be the material increase of income, in shape of interest, if in addition to that ordinary income for every acre of land hereafter watered, an additional rate of from 12 annas to rupees 1-4 per acre (probably more on the older villages), was to be supplemented from year to year as a constant and unalterable rate for so long a period. In the face of this lucrative expectation, we are going to surrender this simple mode of enhancing the interest on outlay incurred in canals.

41. What private Company would ever come into the field under such restrictions over long periods, which bar the right of levying full returns for capital invested in such expensive undertakings ?

42. Another thought is of still more importance. It is just possible there may be changes in the canal lines. Already some officers are of opinion that the branch known as the Lahore Branch should be shut up as far as *irrigation* is concerned, as half the country there is already easily irrigated from wells, and the whole country can be so irrigated. The chief argument is very forcible, that the water can be far better employed if diverted to other lines of the country which are really dry and bleak, have little rain, and where wells are too costly to be made. I certainly share this belief, and have recorded my views in a printed paper, which I will send you. The arguments there advanced, will, I doubt not, be allowed to be sufficient to support what I say, that, it would, in the prospects of such probable changes, bind our hands by including prospective income in fixed leases, on the land revenue side for 20 years, in villages along this canal, which Government might hereafter wish to abandon ; for once these leases are taken in so many as 500 villages, we shall be unable to change or go forward for 20 years. Government will be fettered and bound to sell water in localities where it is not absolutely needed, and be

unable to draw away the supply to perhaps 2,000 estates in Turan Ta Lahore, and Choonean, which are really exposed to drought and need from this source, and which, if so watered, might well have a large portion their areas converted into safe domains for the production of food for man fodder for cattle.

43. A very similar difficulty may arise if the opinion now on the in should ever be acted upon, to abandon giving any water to the villages in upper divisions of the Doab, which have plentiful rain, and can produce easily without the aid of this mode of irrigation. If once these leases water revenue are given for 20 years on reduced areas, owing to the system not being matured, it will be impossible to carry out any such tions above described, and so the Government may find itself in a dile from which it would be impossible to extricate itself for a period of 20 ye by which time perhaps claims and expectations may arise rendering changes in the distribution of water extremely difficult of execution.

44. For my part, I am entirely with those who think that we ough keep the canal water for such tracts only as cannot be easily irrigated in other way. Already there is not enough water to meet the demands of fifth the Doab; and as there are large tracts in the high *bangur* of Am and Turan Tarun, in the Manjha wastes of Lahore and Choonean, along the arid belt of land which runs the whole way down through the less districts of Montgomery and Mooltan, it is, I hold, our first duty, should be our chief aim, to *irrigate these countries first*, giving only to favored regions any surplus of water that can be spared. If this view is it would be no matter, if the effect of the present enquiries and new as ment now put on should be that the villages of Gurdaspur and Amri Districts declined to accept the terms. In all such cases, I am not sure it not be better at once to fix either prohibitory rates or such jamas as be deemed high, in order purposely to get rid of such engagements, and ourselves free to open the Hurrekee and Kussoor branches, and carry water through these, and Mr. Palmer's main canal.

45. A consideration of this kind alone would probably turn the sca to which is the best, the safest, and the most beneficial principle of assess of canal water rent, as far as the wants of this province are affected, highest interest of the State, and having regard to the greatest good to greatest number.

46. I know it will be urged that these difficulties are not so bad as they have been pictured, for has not the plan enjoined been long in existence on the Western Jumna Canal? Granted; but there is this difference, that most of the villages *there* have for many years been *under the full influence of the canal;* 60, 70, and 80 per cent, of their areas having regularly taken water. In such cases the tendency to inequalities of assessment may not be so great, but I have extreme doubts on this point whether Government, as the capitalist who has laid out enormous sums of money, has really obtained full returns for its outlay. I am informed that even there the proportion of the Government revenue which may be said to be due to the canal, and over and above the canal water-rate, does not exceed 1 rupee an acre, and in many places falls only about 8 and 12 annas an acre; which seems to be exceedingly low, tending to restrict the power of Government from obtaining the full interest for money in comparison with the large amount of water absorbed from these canals.

47. For the above reasons then, I deem it right to place these observations on record in the hope that the question may be reconsidered. I believe you share the opinion I have formed in many of the points here raised. Very many officers do the same. I think it of the highest importance that Major Crofton should be consulted, and be asked to record his opinion also. I am quite satisfied the principle I have now been called on to carry out is objectionable in many ways, while that which has been introduced is sound and feasible, and should hold good, at any rate, for this term of settlement.

48. I shall be obliged by your recording your opinion and issuing instructions on the above points, as I wish to take action in the matter at once; and as His Honor the Lieutenant Governor has, in his No. 59 dated 28th January last, consented to receive any remarks I may wish to offer, I request that this report may be submitted for his perusal and consideration as well.

Copy of a letter No. 409, *dated* 25*th July* 1867, *from E. A. Prinsep, Esquire, Settlement Commissioner, to the Secretary to Financial Commissioner.*

Subsequent to my letter No. 215, dated 20th April, to your address, I have been engaged in working out rates for the canal water assessments.

The whole of the statistics of area irrigated by Baree Doab Canal fr... year, and up to date,—the receipts obtained therefrom by Canal Officers,—extent of land under different kinds of produce during one selected year, 18... the gross returns of revenue deducible under a fair calculation for a mod... Government demand, and the elimination of reasonable acreage rates over... above the unirrigated aspect, have one and all come under my closest ex... in the two Districts of Gurdaspur and Amritsur.

2. I am now in a position to call your attention to some impor... points connected with the discussion of that question, whether the N... Western Provinces' system shall be introduced in the Punjab as the meth... assessment for canal watered lands, or whether there are not still str... arguments for the adoption of what may be termed "the additional ac... system."

3. I find that instead of there being 1,500 villages to be subjected... this assessment, the total number that are regis... in Canal Office returns as taking water, are... 819.

Gurdaspur	259
Amritsur	560
Total,	819

4. The total areas watered in each year up to 1865 are here detailed:—

District.		1859.	1860.	1861.	1862.	1863.	1864.	18[illegible]
Gurdaspur	...	9,662	16,024	22,844	32,670	25,082	22,964	[illegible]
Amritsur	...	15,856	29,252	55,618	64,682	75,486	73,634	1,[illegible]
Total	...	25,518	45,276	78,462	97,352	1,00,568	96,598	1,[illegible]

I have confined my enquiry to the year 1865, as that was a well watered... and the produce papers had only been completed up to that year in the... Offices.

5. In working out my produce rates, first in the totals of each a... ment circle, and then by a back process on each village within that cir... find that the following standard jamas are deduced as a fair water r... rate at ⅛th of gross produce, as the additional profits obtained by irri... over and above unirrigated rates.

DISTRICT.	Watered area of 1865.	Total cultivated area of some villages.	Per centage of area irrigated on cultivated areas.	Revenue rate jumma deduced as Standard.	Additional acreage rate deduced.
Gurdaspur ...	33,098	1,00,314	33	32,978	1 0 0
Amritsur ...	1,20,619	3,11,483	39	96,171	0 12 8
TOTAL, ..	1,53,717	4,11,797	37	1,29,149	0 13 9

6. The Purganahwar details are given in Appendix No. 2. It will be seen that in an area of 1½ lacs the standard jama points to Rs. 1,30,000 as a fair additional jama for canal advantages, and this falls at a rate of Re. 1 in Gurdaspur, and 12 annas 8 pies in Amritsur. Considering that the irrigation in Amritsur and Lahore has yet to be developed, I see no objection to raise the rate there too to one rupee an acre all round. This will give us Rs. 1,54,000 in Amritsur Division.

7. The Lahore papers have not yet been made out, but we are informed that there are some 40,000 acres irrigated there, and at same rate of Re. 1 all round we may expect Rs. 40,000 or 1,94,000 altogether.

8. In actually assessing individual estates, I have no doubt but that the remaining Rs. 6,000 may be made good, and this then will rise to 2 lacs exactly.

9. I expect then to raise in this way a new income of some two lakhs of rupees for enhanced profits due to canal irrigation in three Districts—Gurdaspur, Amritsur, and Lahore.

10. Now the question before Government is, whether we are to assess on the principle pursued in North-Western Provinces, whereby we add this jama of 2 lakhs to the jama already fixed and announced on the unirrigated aspect, and incorporate this as the entire Government demand for a period of 20 years; or whether it is not desirable, on every consideration, to adopt the principle of a moderate acreage rate fixed once for all for the term of settlement as regards each estate, and let this be applied not only to the 1,53,717 acres irrigated up to date, but also to the increasing area watered from year to year, in order that many advantages not obtained by North-Western Provinces may be secured by this principle of assessment.

11. My views have already been laid before you, since then I h had further opportunities of discussing both systems with several officers, the zemindars and experienced Revenue Officials, with Colonel Crofton, many of the Canal Officers, and latterly with Colonel Dyas. I have elicited all the objections that can be urged against the acreage system further I have weighed the pros and cons the more strengthened I am in conclusions recorded in paras. 34, 35 and 36, of my previous report.

12. I have arranged these arguments in juxtaposition in a sup mentary memo. (Appendix No. 2), copy of which I enclose, with the re that you will place it before His Honor the Lieutenant Governor, before I understand the reference is now under consideration.

13. I wish at the same time to call your earnest attention to the fi arguments that are there submitted.

14. There are two points of view in which, to my mind, there can question as to which of the two plans it is better for the Governm accept, both in the interests of the people and of the State.

15. In para. 40 of my former letter I pointed out "that by the laid down by Supreme Government future canal revenue is being delibe sacrified for 20 years, and that on a canal where everything has to be mat I am now able to support this statement by a quotation of facts. I that the loss to Government by not adopting the acreage rate, and tak moderate enhancement on every acre as it is watered from year to year, amount *within a period of* 20 *years to the enormous sum of half a crore of* at the lowest computation. Appendix No. 3 will shew in full detail I have arrived at this conclusion from the figures and facts that have before me in my late enquiries. This synopsis explains how I have with present area amounting to two lakhs of acres rated at two lakhs of ru enhanced revenue in 1865, (at one rupee an acre as additional rate) and allo for a ratio of increase in area, and receipts for series of four periods of 3, 4, 5 years, into which I have divided the 20 years, we advance the additi revenue from two lakhs to three lakhs after third year; to four lakhs after ano four years; to six lakhs after another five years; and then to seven lakhs du he last five year period of the whole term. This, when calculated, will brin a return I estimate *of* 96 *lakhs in the whole period*. Deducting at the rate of

lakhs per annum, the continuous jama fixed at the outset, according to North-Western Provinces' plan, will amount for the same 20 years only to 40 lakhs. The difference of 56 lakhs then is the amount that Government will lose on the Baree Doab Canal alone.

16. If extensions of this canal to the lower rainless districts of Montgomery and Mooltan, and the inundation canals of those and other districts are taken into account to enable us to judge the full extent of this principle, there cannot be a doubt that the loss will even increase to 70 and 80 lakhs in this Province alone; while, if other canal systems are included, such as the Jumna and North-Western Provinces' Canals, it is no exaggeration to say that at the lowest estimate *the State will be deprived of more than a Million of money.*

17. I have gone over the areas and calculations very cautiously. The areas for previous years are specified in the synopsis; I have shown the ratio of increase in past years, and on that analogy I have endeavoured to bring my ratio of increasing receipts to as low a figure as the circumstances and my knowledge of the country and capabilities of Baree Doab Canal will permit. *Even then, I learn that 56 lakhs* of revenue can be secured to Government by the simple system here advocated. I can hardly believe that in these days of financial pressure, Government will consent to surrender this, when it is known how easily it can be obtained; and, further, when it has been shewn that according to my system the very act of paying this new irrigation tax has the merit of *being purely voluntary.*

18. Though this is undoubtedly a large sum, yet it must be remembered that the collection under such voluntary action must be easy. It is entirely dependent on two considerations :—

(1). That there will be water enough in the canal and its branches to irrigate seven lakhs of acres, and of this I have not a doubt if certain measures for selling the water where it is really needed and to the best advantage, are carried out;

(2). That the rates fixed by Canal Department hereafter, and now at this settlement, are so moderate as to leave ample margin for profits to the rate-payers. So that the operation of the ordinary law of demand and supply may have free scope and be respected.

I have not a doubt as to my own rate of one rupee—*viz.*, this additional r being fair. If Government should prefer a lighter rate, then 12 annas an ac as the average of all the purganahs, would be sufficient; if something betw these two rates are taken as a constant rate, I am satisfied that it will be deem moderate, and the measure I wish to inaugurate will work with the great ease, and with something like real equality on all concerned. The accompany ing memo. will shew how I prove this assertion to be entitled to acceptation.

19. The next point bears on the people's interests. You will perceive the memo. that I lay great stress on the absolute necessity of having a syste of assessment that shall do away with all inequalities, and shall secure volunta action on the part of zemindars to take water or not as they please. M reason for this is, that Amee Chund, Extra Assistant Commissioner, who w lately employed in revision of Hissar settlement, has brought to my notice t mischief and ruin that took place in the estates watered by Western Jum Canal by the North-Western Provinces' system; out of 54 estates, 28, or m than half, suffered more or less from that system; 4 villages were sold outrig 8 were so impoverished that shares of the estates were sold; 6 were ruin from over assessment, were put up to auction, and not till large reduction revenue had been effected did the proprietors recover for several years aft while 10 others were so heavily involved in debt that they nearly fell into t hands of strangers.

20. Full particulars are explained with the aid of a sketch map of th estate in Appendix 4, which has been made over to me by this officer himsel from a work he published on the Hissar District. This vernacular work w examined by the Commissioner of the Division, who had even a translatio made of it, so that there is full authority for the facts I here relate.

21. I know it may be said in reply, that this misery may have bee produced by land revenue being pitched altogether too high on the o principle of Government demand at two-thirds of net assets, but that under th lower proportion of one-half, such events may not have occurred. I have ma enquiries on this point. Amee Chund assures me that though this may hav aggravated the evil, other causes were at work, arising out of the system o amalgamating unirrigated and canal assessment, which undoubtedly broug ruin to many of the estates.

He cites two in particular—

(1.) That the supply of water failed in some of the estates at the tail end of, or more remote in situation from, the canal;

(2.) That in ill-peopled estates whenever tenants were drawn away to fields on lower rents, the proprietors were still saddled with the high jamas, payment of which was obligatory, whether lands were deserted, or hands to work them were not available.

It can easily be conceived that two such potent causes in poor tracts like Hissar, Choonean, and Montgomery District, would at once tend to disturbance of profits and silent deterioration.

22. I say then, with this picture of real misery before us which has happened, and the great financial loss that seems to impend, it is right that a question of such vast importance to the people,—to the credit of the Government in its administrative capacity,—to the advantage of the State in a financial aspect,—and to the cause of irrigation in general, should receive the most serious consideration before final orders are passed.

23. As I promised in a demi-official communication to the Secretary to supply further facts and arguments, I request the favour of your placing these papers before His Honor the Lieutenant Governor as soon as possible.

Memo. by Mr. Prinsep, Settlement Commissioner, on the acreage system of canal water assessment, written with a view to remove objections, and call further attention to an important question (discussed in his printed paper No. 40.)

Some objections having been urged against the principle I have advocated for assessing all lands as unirrigated, and then putting an additional rate over and above canal water rate to be a constant rate, and sufficient for the realization of enhanced revenue on lands improved by canal irrigation, and this principle of taxation to be enforced not only now when a settlement of the land revenue is being fixed, but for every year hereafter of the term of settlement, I have thought the matter to be one of so great urgency as to require discussion, and as the objections are strongly advanced in several quarters, it becomes all the more necessary to weigh them calmly, thoroughly, and outspokenly.

Each point urged then shall be considered separately, and my remarks will be placed in juxtaposition.

I.—It is observed that my paper (No. 40) views the subject only *in one aspect.* In theory, the principle advocated is admitted to be correct, but there are serious objections to its application practically.

I.—There are three aspects in which the question must be viewed:—

(1.) In the interests of the people;

(2.) In the interests of Government in its administrative capacity;

(3.) In the interests of a *great question* affecting the good of the State and bearing on the finances of the country.

It is maintained that the method of assessment proposed certainly provides for all three interests.

(1.) An average acreage rate, constant for a term of settlement is fixity in itself, known to every body.

It draws the line of taxation on capital labor and raw produce so moderately and evenly on all alike, that none are harassed. None who irrigate now are made to pay a fine hereafter, while those who irrigate hereafter escape scot free for a term of years, which, however short in period, will still disturb equality of taxation.

It does better than this, for it leaves it optional, both now and hereafter to take the water. The system proposed is a *voluntary one.* If you take the water, you must pay full price to Government as the merchant who by his capital has supplied it for open sale.

If you take the water, you must pay something extra to Government, as the co-landlord entitled by law to a large share of the profits, but content to fix its demand on this margin of profit now and hereafter to a moderate limit. If you do not take water you neither pay one nor the other.

Surely under such a system ample consideration is shown to interest No. 1.

(2.) Any system which has fixity, moderation, does away with short term settlements, escapes all chance of readjustment and remission of land revenue, requires no new agency for collection, and no new enquiry for the whole term of a settlement, increases the income of the State from year to year, and thereby the resources of that State to improve the country, must be admitted to be a strength to the administration. The second interest then may be allowed to be duly considered.

(3). That system surely must be the best which protects the two former interests, and still provides unceasing funds, out of which irrigation can be developed and extended to any extent.

That system surely is desirable and politically expedient which ensures a steady, though moderate, increase of revenue from year to year. As the country gets developed, and the people voluntarily come forward and pay this increasing form of taxation, which can be turned to the best account in further improvement. Put aside that the Canal Department shall not be credited with this new source of income, that they must be satisfied with the *full* price of the water ; still here is a source of income which can be obtained if fixed on a moderate and even low scale of rate in some places for the first few years of the life of a canal, without any pressure whatever, payment of which is voluntary, and which if paid may be accepted as a free-will offering by the State in support of its efforts to raise taxation to meet the two great wants of the country—(*a.*) improved communications, and (*b.*) works of irrigation.

Any system then that deprives the State of these ever increasing revenues must surely be denounced as financially unsound and politically injurious, for it will throw back the improving power of a country we know not how many years.

II.—Chiefly that it involves in fact an annual settlement to some extent.

II.—To an extent next to nominal. The additional rate being *constant*, fixed once and for all for each village for entire term of settlement, every body knows it; application of such rate is easily done, as the canal area must be measured yearly any how for very many years, so the same operation does for both Canal Department and this yearly State income. There is no element of uncertainty or harassment to the people in this. There is no more an annual *settlement* for the rate has been settled. There is an annual collection of a fluctuating revenue, it is true. So there is in the measurement of river lands, and the changes of jama caused thereby; so there is (as far as the people are concerned) in the village rating which varies in amount from year to year, though the principle of rating on shares, soils, wells, or even land, universally remains the same. Surely there can be no more of an *Annual Settlement* here than there is in annual collection of the Road and School Fund income, where the rate, *viz.*, the per-centage, is *fixed*, though the amounts of yearly collection vary.

III.—The water rate taken by the Canal Department, for the use of the water, can never be raised above a certain height, *viz.*, the cost of irrigation from wells.

III. But how many villages are there with *no* wells, where perhaps no wells can be made, or are not worth making, owing to the large prime outlay required. Then, too, we know (I annex a synopsis prepared by Mr. Brown, Executive Engineer of Kangra District, who has for years studied the comparative cost of labor and

capital incurred in lifting and utilizing water) that the cost of irrigation from canal is from 20 to 30 times (he gives the cost at 36 times) cheaper than what can be secured from wells. If so, what is to prevent Canal Department, or Company (and I lay stress on this, as it is permitted by the advocates of a system contrary to the one I am seeking to introduce) raising their rates to the *full price,* and this they may urge in all propriety on the above consideration of comparative advantage, to be properly satisfied when canal rates are fixed even 20 times higher than surrounding well irrigation. Has any one considered this aspect when they believe there is a safeguard against raising canal rates.

I know it will immediately be replied, "but if the rate payers find they cannot pay such high rates," they will simply not take water, and have recourse to wells. If wells cannot be made what then. Even if some are driven to well irrigation, conceive the impoverishment that may arise with such as cannot afford to incur expenses of constructing new wells; and if such have been taxed an enhanced jama at time of a settlement, which is obligatory to the end of settlement, how can such a one exercise this free will that is supposed to be given, when he finds he cannot afford to give up canal irrigation, or he will be paying a fine over and above unirrigated rates; his only safety then of the two things he cannot afford, is to hold on as long as he can do so, though reduced to extremities he can go on taking canal water at even high rates, until he is quite impoverished.

By the "amalgamation" plan he has no hope, no way of escape, while he complains inwardly of the Government who, because water was begun to be taken *after settlement,* allows his neighbour, who may be his own brother, to pay *altogether* less for the canal advantages (taking canal rates and increased revenue into consideration), while he is fast being reduced to beggary, not being able to escape from either liability.

By the new system now advocated *it is purely voluntary.* Let the canal rates be too high in the estimation of subscribers, and as *they have the option* they will cease to subscribe. Thus the law of supply and demand in this case will adjust itself. In the former there is a check on the operation of this economic law, which must prove disastrous to both interests some day, viz., the buyer who is bound to buy, and the seller who is not compelled to sell.

Then too, we know that zemindars in practice have been found ready to pay anything for water in certain seasons if the supply is near and full. The

will rather even risk impoverishment than make up by labor and foresight in other ways. It was exactly this cause which had much to do with the complete break down and agricultural ruin that occurred in the villages on the Western Jumna Canal. I perceived several traces of it even in the Pathankote estates on the Baree Doab Canal previous to new settlement.

I maintain then, that however plausible the objection is in practise, it is not attended to by the people themselves; it is not a sufficient guarantee against terrible impoverishment that may silently set in any village, of the fact, cause, or extent of which we may know nothing till it is too late to apply a remedy.

IV.—The profit derived from water will depend upon the kind of crop, *therefore* there must be not only *one* but several acreage rates, and these must be levied, not as the water rate from the cultivators, but from the proprietors.

IV.—Why, I ask, should different rates be *necessarily* imposed? Why need we tax capital and raw produce, when our real object is to raise money in the simplest and safest way in order to shew that canals will pay; money is forthcoming, and irrigation is a necessity in a country so often exposed to famine, that it must be encouraged.

Again, we are inconsistent; wells are made with the capital of the people, canals by the State alone, why need both be reduced to same principle of requiring half net assets or water rent profits to be taken as the only thing proper for Government to demand. We can surely afford to be generous, so long as 10 and 12 per cent interest is obtained without failure. Anything beyond that can be demanded by the State acting in the interests of the many by a more moderate rate and system of taxation. Again, are not all assessments really made on *averages*. The *theory* may be one thing to take half net assets, (of each kind of produce too would be required to drive this argument to its proper conclusion) but is this ever done in practise, quoad each proprietor, even in an ordinary unirrigated assessment? If it cannot be attained there, why should this be deemed an essential here.

Again, as the object of the State is to secure increased production and improved communications for the general good of the country, and this cannot be carried out till Government increases its income from some source, and is able to shew that outlay so incurred will bring in good returns from which further irrigation measures can be executed, is not Government bound to adopt the simplest and safest plan by which money is not sacrificed, and can be raised under even a moderate average acreage rate? If it is bound to do so,

then surely it is easy enough for Government to rule in its own interests, in the interests of the greater number, that it will be satisfied with an average acreage rate and does not care to take the whole profit, or make vain efforts to do so by insisting on several rates, so long as a moderate yearly increase of income is brought into the treasury for the purposes of upholding the cause of irrigation everywhere.

Though there may be a deviation from the strict principle of getting full profits upon each kind of crop, *other advantages* are abundantly secured, e. g. :—

(*a*). The rate is uniform and is easier applied.

(*b*). The average rate presses equally on all who have taken water before, and who wait to take water after, a settlement.

(*c*.) Equal taxation is thus secured, and is cheerfully submitted to, because known to be light in its pressure, and *fixed* for a given number of years.

(*d*.) Taxation fixed on these principles does not press on capital, industry, or raw produce.

(*e*.) Greater encouragement is thus given to watering only the best and most paying crops, and so the wealth of the community expands and has free play in further demands for water.

(*f*.) And as better crops are more abundantly grown in watered lands, these lands are taxed, or can be taxed, in one sense by higher series of rates taken by the Canal Department. So long as the agency in creating and selling the water is the same as the co-landlord of the country, the State will, I apprehend, be in no way a loser now, and must be the recipient of larger and more increasingly large receipts hereafter.

V. The rate must be taken from the proprietors, and not the cultivators, so here is a complicated operation.

V. This is easily obviated by making a rule that canal-water will be sold to cultivators only through, and on the responsibility of the proprietor. The rate paper then goes to the proprietor with two columns in it : one for his own payment; the other for what is due from his subordinate. Besides it is a question now being mooted whether Act X of 1859 will not bar the right of a landlord to sue for enhancement of rent caused by outlay solely incurred by the cultivator. If he is to pay water rate

to Canal Department, and his rent cannot be enhanced, then what becomes of the argument about the necessity of reaching canal profits through the landlord's pockets. As he will pay for water put on land he cultivates, so will the cultivator. They fare the same and pocket like advantages, why then all this stress laid on the necessity of getting at landlord's entire profits. He must be treated just as a cultivator.

But supposing it is necessary to take this additional acreage rate from the proprietor, where is the difficulty, either as to rating or collection: open out another column and treat him as if he was a cultivator. Instead of one amount now paid through him to the Canal Department, he will have to pay a second separately to the State. I can see no difficulty in this procedure.

VI. When there is uncertainty in the supply of water, the same allowance should be made in fixing the assessment.

VI. This is just what is done and must be done. It is a strong argument to shew the preference of a system of average acreage rates. Instead of an amount now fixed once and for all as reduced area at the time of settlement for 20 years, the system requiries a fixed rate to apply for some period, not only to the reduced area now found to be watered, but what shall hereafter be watered from year to year. Thereby full allowance is made by a moderate rate applicable to all alike, and obviates all the difficulties of uncertainty in supply of water and variation of seasons. If they are harassed by the one, or blessed with good seasons, it is in the option of every subscriber to take water for that year or not, just as he pleases.

If this allowance is made not by a rate, but on the amount fixed at settlement once for all, whether water is given, or can not be given, only one-half the evil is obviated of that. A proprietor may silently be reduced to suffering. He may alter the mode of cropping to prevent exhaustion by allowing for fallows. He himself may happen to have no more land, or may have abundant land and few tenants. Other causes may be at work. An estate next door may be taxed more lightly, which admits of lower rents being demanded; or there may be neighbouring lands, waste or cultivated, to be had on cheaper terms. The unirrigated lands hard-by may be offered on very low terms, and in good seasons, or a succession of good seasons of rain, such lands may yield much larger profits; or even his brother hard-by may also have more land than he can manage, none of which is watered by canal, or having some land so watered, it was brought under watering *after* the settlement.

For any of these cases I say there is a risk, and a great risk, his tenants may be induced to leave him to take up any fields on considerably lower rents. Where is there any safety then to such a proprietor if deserted and unable to procure, tenants owing to the disparity of profits caused by this fiction of previously fixed assessment. It is just such cases that happen, and must happen; that have happened in the Western Jumna villages as I can prove by undoubted fact. The impoverishment that there led to sale of estates even, is attributed by one of our best native Revenue officers (who was connected with the revision of the settlement and had the sure means for coming to a correct conclusion) to this chief cause of obligatory and partial assessments.

Indeed, it is a question (putting consideration of soils apart) when village becomes fully cultivated and reaches that stage of development the land is minutely divided, whether regard to rotation of crops does become such an absolute necessity that if we were to take the history of fields now cropped with different crops, they will not all have to pass, sometime or other, through the same system of rotation within fixed cycles of years. My experience satisfies me that this conclusion is indisputable and if it is then the argument for an average line of rating becomes too strong and must be admitted, or the assessment must have a tendency on the present (*i. e.*, one year) distribution of produce to become unfair in principle, unequal in pressure, not only through a series of years; but it occurs to me whenever assessment is based at the outset merely on the profits of different kinds of produce ascertained to exist in the one year only that the settlement was made, I do not understand, then, how the allowance in fixing the assessment can in practise be really secured, except by very light rates; and if light rates are fixed, it would really be an argument for the average acreage system for it would amount to this, or next to this, in practise.

VII. When uncertainty or variations of seasons are very great, the profits from water had better be left out, and dry rates taken.

VII. What for a period of 20 or even say 10 years settlement? A settlement on such short term or short of years, must be admitted to be objectionable in every point of view.

For all this period does Government really mean to say it does not care for increasing revenue, when it can be shown (1) that it can be equally moderately fixed; (2) that it can be voluntarily and easily paid.

If this substitute must be resorted to, *viz.*, to take no enhanced revenue, it would amount really to admitting that there is no escape, but to resort to the very principle I am contending for: evil being foreseen, dry rates are recommended, and the result is what? Why just the same. Canal advantages are uniformly rated *on a system of acreage* rates, only with this difference, that instead of two rates being taken by Government in its double capacity of water merchant and the co-landlord, Government is content to take it in the former capacity only by an increased canal water rate. There is something inconsistent in this. Substitute a Canal Company for the Government as the water merchant, and how does the principle degrade itself to actual negation of all share in the profits.

But apart from this, why should there be any such evasion of a fiscal responsibility: canals must be made to pay. How can they pay if there is this readiness to give up the enhanced revenue which adds to the fund out of which irrigation works must be made?

Has any one counted the cost of such a suggestion? Take the Baree Doab Canal for example.

The abandonment of the acreage system alone will lead to the surrender, I estimate, of half a crore of rupees within a period of 20 years, even fixing the constant rate at from 12 annas to 1 rupee an acre on double the present area watered. After 10 years there can be little doubt the area will be much more than double. If care is taken, and resources are husbanded, this may increase to treble the extent. But accepting the double standard, Government will be deliberately throwing away in these days of increasing financial pressure more than half a crore of rupees, which might be raised without a murmur from the people.

This result is obtained by fixing an additional rate as a constant rate on the two lacs of acres at present watered from this canal, but supposing the suggestion thrown out in this objection were followed, *viz.*, to fix the assessment on dry rates, and take nothing for enhanced land revenue for 20 years, by which time the irrigation system will be matured, does any one know the financial meaning of this? It simply amounts to *the deliberate sacrifice of Rs.* 2,00,000 *yearly for the next, say, three years;* 3 *lacs after for another* 3 *years*; 4 *lacs* after 10th year, and so on. *The actual loss of income would not be less than some* 70 *or* 80 *Lacs of hard coin for the entire Province in the entire period of the settlement!*

And is this to be given up, which would supply funds for constr perhaps another 100 miles of large canals, or some 5 smaller canals, cap irrigating two to three lakhs of new area from year to year; protecting the of the country against famines; increasing production; and reproducing means of new income, which shall still further increase the good and w of India.

VIII. I think not for these simple reasons, which are to a certain ex recapitulation of what has been urged above—

VIII. It is better for the country and the Government, in temporary settlements, that such profits, and profit from extension of irrigation during the term of a settlement, should go to the people, than that they should be grasped by Government by means of annual inquiry.

(*a.*)—Admit that the people get the profits, so the wealth of the country expands; but is it better for the country, and for Government, that (I say part, for only a moderate rate is propos be taken, and if Government likes it can be very light rate: the principle is the same) should be placed in the hand the State to be formed into a fund for the promotion of irrigation works over the country; that more land may be improved and protected ag famines; that this calamity may be stayed which affect the general of communities. Should such occur, it becomes imperative on Governme raise new taxes in other ways. Witness what has occurred all over Ind these days, chiefly owing to the Orrissa famine. Indirectly, if not dir then these individual proprietors, to whom it is proposed to give *all the pr* would suffer, while if part of the profits are given up, the resources of the State are improved, and new taxes are avoided.

(*b.*)—Equality of taxation is secured by the one plan, but not by th other. Is this not an essential good to everybody?

(*c.*)—Average rate being imposed and constant for term of settleme every one knows it. Is there not fixity in this?

(*d.*)—Moderate rate being imposed (let it be even low to remove th impression of Government grasping at anything that has the slightest cha of being oppressive), but still being uniform, all can pay it equally ali If any one thinks that Government is grasping in its double capacity, he h it in his power not to take the water, and in this way we have the b guarantee against inordinate encroachment of profits. There is a remedy h in every man's hand; while in North-Western Provinces' system the law supply and demand must be disturbed *quoad* obligatory rate-payers. If th

is obligation on their side, and no promise of remission or permission to withdraw on the Government side from what might prove an oppressive contract with individual subscribers, can it be said that such an arrangement, onesided at its commencement, may not also be deemed grasping and severe by intended parties when the day of trouble should ever arise. Is it not better for country and for Government to have this matter of taking water on purely an optional basis.

(*e*.)—Then, too, there is greater encourgement given to the production of better crops, because capital, industry, and raw produce are not taxed at higher rates. Under an average acreage rate all can be industrious without the State grasping at higher share of the profits, and even if it wants to do so, it can do so by putting on something to the differential rates paid for crops to the Canal Department; (which, as far as incidents of taxation go, in the land revenue system of India, can be sufficiently absorbed again by Government working on that discretion), and with this advantage, that the limits of a just demand can never be exceeded from year to year, inasmuch as it is in the option of any one so unduly pressed to refuse to take water. Prices must readjust themselves to the measure of the popular demand.

(*f*.)—If it be urged, that the annual enquiry is in itself bad and vexatious, my reply is, that looking to what we avoid, and what we undoubtedly gain, it is by far the lesser evil, even here the evil is exaggerated, for the rate being moderate or low, fixed for each village for the term of settlement, known to everybody, and admitted to be light, no one would complain.

This yearly amount would change, and no more. The area is obtained by a process that must continue for the elimination of the canal water rate receipts. The application of additional rates on those areas amounts no more to an enquiry than village rating, river assessment, or the collection of Road and School Fund income amount to a process that can be described as an annual enquiry in the sense of harassment to the people.

IX. If the extension of irrigation is rapid, and the profits certain or large, then this can be obviated by reducing the period of settlement.

IX. Yes; but to what extent? 10 and even 5 years. This is throwing back the prosperity of the country at least 3 years in every 10. Short settlements are an unmitigated evil. In lieu of income of this kind which is easily and safely obtainable by another process, without a murmur in the country, and with no difficulty in collection, we prefer to

perpetuate short term settlements, prevent the earlier and surer expansion of wealth, and sacrifice perhaps one part of the agricultural community at the expense of another. I allude to those who take the water before, and those who after, a settlement; those who can take water now or hereafter, while there may be many whose lands are too high or too low, remote from water courses, or are quite beyond their influence. These evils are not objected to in the wish to secure the least good to the least number.

I confess I cannot concur in this solution of the difficulty which perpetuates one series of evils, and puts off to a later day others even of a more aggravated nature, tending to prevent or retard all progress.

X. To meet the financial loss by the above objections, it is urged that even if it comes to the worst, what is to prevent Government raising the canal water rates to obviate such possible loss.

X. My arguments above show that this has been anticipated as another solution. Certainly canal water rates can be raised, can be made to over-ride any *loss to Government*. There is doubtless every reason to believe that the interest will be well looked after over a series of years; but when it has been maintained we are not to look at the question in *one* aspect, but what is best for the country as well as *for Government*, a little reflection will shew that this is no way of escape. On the contrary, greater inequalities of yearly taxation will arise. The proprietors whose enhanced jama was included in the settlement under North-Western Provinces system will be utterly depressed, while the increased water rate will take the form of a demand for a higher price from those who began to take water after the settlement. To prop up a financial loss, is this a just way of distributing the burden of taxation? I consider great danger likely to arise out of a system which allows Canal Department to raise rates without reference to a law that regulates supply and demand, and as regards the former class of involuntary subscribers, the consequence I foresee must some day or other prove disastrous.

CONCLUSION.

But are these sufficient reasons for refusing to accept a method of assessment, which promises to increase the income of the State without pressing on the real interests of the people.

Are we really going deliberately to sacrifice what in these parts will amount to a loss of more than half a crore of rupees within the term of 20 years

and may amount to 70 and 80 lacs; and if the opportunity is overlooked in North-Western Provinces and in other parts of India where settlements may be going on, may still further amount to one and two millions of money.

Is there no one ready to warn the Government, and prevent so serious a financial calamity?

APPENDIX No. 2.

Parganahwar abstract of areas in 1865, watered by Baree Doab Canal, for 7 years in Amritsur and Gurdaspur Districts.

Parganah.	Area watered, 1865.	Total cultivated area of same village.	Per-centage of area irrigated on cultivated area.	Revenue Rate Jama deduced from Produce for irrigated standard only.	Additional acreage rate deduced.
Pathankot, ..	9,800	30,224	32	8,454	0 13 9
Gurdaspur, ..	23,298	70,090	33	24,524	1 0 9
Total, ..	33,098	1,00,314	33	32,978	1 0 0
Buttala, ..	32,195	82,965	39	35,666	1 1 4
Amritsur, ..	34,541	83,537	41	24,459	0 10 6
Ajnala, ..	31,129	69,853	45	19,375	0 9 7
Tarn Tarun, ..	22,754	75,128	30	16,671	0 11 8
Total, ..	1,20,619	3,11,483	39	96,171	0 12 8
Grand Total, ..	1,53,717	4,11,797	37	1,29,149	0 13 9

APPENDIX No. 3.

Synopsis of calculations regarding Canal Water Revenue by—
(1.) Proposed plan;
(2.) North-Western Provinces plan;
on area watered and likely to be watered by Baree Doab Canal.

N. B.—Area watered in Amritsur Division in past years stands thus :—

1859.	1860.	1861.	1862.	1863.	1864.	1865.
25,518	45,276	78,462	97,352	100,568	95,598	1,53,717

Quadrupled in first 5 years. (1859–1863)
Doubled in 5 last years. (1861–1865)

Future years.	Area irrigated.	Gross Ordinary Canal Receipts.	Deduct working expenses.	Net Return.	Additional acreage return as enhanced revenue.	TOTAL.
1865, 1866, years 3 1867,	2 Lacs (including Lahore.)	5 Lacs.	4 Lacs @ 80 per cent on income.	1 Lac.	2 Lacs × 3 years = 6,00,000	3 Lacs Rupees.
1868, 1869, " 6 1870,	3 "	8 "	5 " @ 67 p. c. Ditto.	3 "	3 " × 3 years = 9,00,000	6 "
1871, 1872, 1873, " 10 1874,	4 "	11 "	6 " @ 66 p. c. "	5 "	4 " × 4 years = 16,00,000	9 "
1875, 1876, 1877, 1878, " 18 1879,	6 "	15 "	7 " @ 50 p. c. "	8 "	6 " × 5 years = 30,00,000	14 "
1880, 1881, 1882, 1883, " 20 1884,	7 "	18 "	8 " @ 46 p. c. "	10 "	7 " × 5 years = 35,00,000	17 " Income from 16th year. Probable Income at 20th year will be 20 Lacs.

REMARKS.—The entries opposite 1865 are taken from Canal Report as actual for that year.
Rates of increase in area and receipts is made out by comparing increase effected within last 5 years.
The additional [illegible]

Additional total Revenue 20 years. } 96 Lacs.
Deduct Initial years 1867 = 2 Lacs. } 40 "
Multiply × 20 years. [illegible]

Conclusion drawn.—If North-Western Provinces' plan is adopted, we get 2 lacs the initial for each year of 20 years = 40 lacs. If proposed plan is adopted, then increase will come in yearly, which will amount to 96 lacs altogether in 20 years.

Thus within 20 *years* an increasing income will be obtained, amounting in all at 20th year to 56 lacs.

If then the acreage plan is not adopted, *and nothing is charged during currency of settlement till a new settlement occurs* 20 *years hence, Government becomes a loser of more than* HALF A CRORE OF RUPEES !

Copy of a letter No. 366, *dated* 12*th May* 1868, *from Secretary to Government Punjab, to Secretary to Financial Commissioner Punjab.*

In returning the original enclosures of your docket No. 143, dated 14th March 1868, regarding the assessment of villages irrigated from canals, I am desired to state that a water rate, which is sufficient, or even excessive in one locality, may be quite insufficient in another, and as varying *abiana* rates are not approved, the Lieutenant Governor sees no alternative but the adoption of a principal such as Mr. Prinsep advocates.

2. The Lieutenant Governor, accordingly, entirely approves of that officer's proposals, and authorizes their being carried out, and relies on Mr. Prinsep fixing the amount at such rate as can be borne without difficulty; but it is to be undersood that this extra rate is to be levied only in the event of water being supplied from the canal, and that the amount is to be credited to land revenue, which appears to be the desire of the Viceroy.

Extract from docket No. 2861, *dated* 6*th June* 1868, *from Secretary to Financial Commissioner Punjab, to the Settlement Commissioner Punjab.*

With reference to his No. 409, dated 25th July last, forwards, for his information, copy of Government No. 366 dated 12th ultimo (received 1st June), conveying orders as to the mode to be adopted in assessing villages for the advantages derived from canal irrigation. Any remarks that may be found necessary on these orders will be conveyed in a separate communication.

Extracts from letter No. 227, *dated* 16*th July* 1868, *from Settlement Commissioner Punjab, to the Secretary to Financial Commissioner Punjab.*

In acknowledging receipt of your No. 2861 dated 6th ultimo, I to enquire intermediately, and request instructions as early as possible, whether I am to understand from the observation in the letter of Secretary to Government, which is an enclosure to the same, to the effect "that *abiana* rates are not approved," it is intended that I must confine myself to one invariable rate for every village from Puthankot downwards to and Choonean.

2. I had contemplated fixing three rates—

1 rupee an acre for the circles of Puthankot, Gurdaspur, and Parganahs.

14 annas for Amritsur and Ajnala.

12 annas for Tarun Tarn, Lahore, Kussur and Choonean.

Allowing myself to deviate from this rule in certain assessment and villages where there were strong and special reasons for doing so.

* * * * * *

4. The next point I am anxious about, is whether it would not be for some Canal Officer to be deputed to attend with me at the meetings to take these additional engagements. * * *

* * * * * *

7. I think then it is of the highest importance that a *Canal Settlement* should now be made once and for all, for every village, by this Canal uniting with me, and authorized to make his arrangements and them at the same time to the people.

* * * * * *

8. I wish to know whether there is any chance of these proposals weight with His Honor the Lieutenant Governor, and if so, whether I need in announcing these new water rates on the land revenue side of the account.

Extract of a letter No. 469*A*, *dated* 28*th August* 1868, *from the Secretary Financial Commissioner Punjab, to Secretary to Government Punjab.*

With reference to your letter No. 366 of 12th May, I am directed submit for orders, the enclosed letter from Mr. Prinsep, No. 227 of 16th and to convey the remarks of the officiating Financial Commissioner follows:—

2. With reference to paras. 4 to 11 of this letter, the officiating Financial Commissioner presumes that Mr. Prinsep wishes a canal settlement of the nature suggested in Colonel Strachey's Memo., circulated with Government of India letter No. 143*I*, dated 13th September 1867, by which the area in each estate which is to have canal water shall be determined, so that the people may know now what amount of canal water they are to have for use, and the rate at which they are to be assessed for it, and may make their own arrangements for the extension of irrigation by wells if they wish to do so.

3. Mr. Egerton, gathers from Major Gulliver—

1. That until the project for enlarging the Baree Doab Canal is drawn out, and the subordinate channels fixed, it is not possible for the Canal Department to say what lands can come under irrigation ;

2. That the effective irrigation which can be performed by a given amount of water is not yet determined, and that, therefore, it is impossible at present to settle the area of each estate for which water will be allowed.

And that for the above reasons it is not possible at present to make the canal settlement which Mr. Prinsep suggests.

4. It is no doubt desirable that the people should know now at once for the term of settlement what amount of canal water they may expect to have, and at what cost, but under the circumstances Mr. Egerton does not see how this information can be given them ; and the water advantages assessment must be made without waiting for the Canal Department to make a settlement of each estate, on the principle of allotting a certain amount of water to each estate.

Extract of letter No. 680, *dated* 5*th September* 1868, *from Secretary to Government Punjab, to Secretary to Financial Commissioner Punjab.*

In acknowledging the receipt of your letter No. 496*A*, dated 28th ultimo I am desired to state that, when using the term *"abiana,"* the Lieutenant, Governor referred only to the water rates fixed by the Canal Department, which the Supreme Government and Secretary of State desire to be uniform on the lands irrigated by any one canal.

2. The differences of advantage derived from water by different villages according to their varying circumstances, must, His Honor observes, be determined by the Settlement Officer when fixing the additional jumma to be

assessed on account of water privileges; and this should, accordingly, be gr ated in accordance with these varying circumstances, as proposed by Settlement Commissioner.

3. In determining the amount of this extra demand, the Settle Officer should, no doubt, communicate freely with the officers of the C Department, and it will probably be advantageous if one of the latter ca present when the jamas are given out, as suggested by Mr. Prinsep.

4. It will not, however, be in the power of any Canal officer, as corre remarked by the Financial Commissioner, to give an assurance that the a rate shall not hereafter be raised by the order of Government.

5. There appears no valid reason for the present, to apprehend t such increase will be made as to necessitate an alteration in the amount additional jama assessed on account of extra benefit derived from the u canal water, but should such prove to be the case, the latter must of be lowered simultaneously with the enhancement of the *abiana* rates. W ever may occur hereafter, however, it is necessary that when the Settle officer announces his settlement, the zemindars be made aware that Gove ment has the power of raising the rates if they think fit, which they are likely to do, in a manner calculated to cause injustice or hardship to t irrigating from the canal, or if the rates be raised to such extent a necessitate a reduction of the extra assessment, this reduction will be introd at the same time.

Extract from a letter No. 4741, *dated 23rd September* 1868, *from Secretary Financial Commissioner Punjab, to Settlement Commissioner Punjab.*

In reply to your reference No. 214 of the 13th July, regarding the asse ment of canal water advantage rates, I am now desired to forward, for y information, copy of this office letter to Government, and of the reply the No. 680, dated 5th instant.

2. With reference to para. 5 of the Government letter, the Financ Commissioner would observe that the Under-Secretary to Governme Irrigation Department, has recently addressed this office on the subject revision of Canal water rates, and it appears that you were addressed on t subject in No. 834*I* of the same date by the same officer.

3. * * * * * * *
The Financial Commissioner does not consider it advisable any longer to defer the announcement of the water advantage assessments, and they should therefore be fixed and announced under the instructions which have now been issued by Government as soon as practicable.

Extract from a letter No. 211, *dated* 13*th December* 1869, *from the Settlement Commissioner Punjab, to the Secretary to Financial Commissioner Punjab.*

As the principle introduced in the revision of settlements in the Punjab of assessing enhanced land revenue due to canal irrigation in the form of an additional water advantage rate per acre over and above the ordinary land revenue assessed on lands as unirrigated has been authoritatively recognized by Government in their letters to Financial Commissioner's address, marginally noted, and is now about to be legislatively affirmed in Sections 45, 49, 52 and 53, of new Act No. 18 of 1869 for the better administration of Canals—see Statements of Objects and Reasons, page 129, *Gazette of India*, dated 16th October 1869, I consider the time has now arrived when I may ask permission to my letter No. 215, dated 20th April 1867 being officially accepted.

(1). Secretary to Punjab Government No. 366, dated 12th May 1868 to Financial Commissioner.
(2). Secretary to Punjab Government No. 680, dated 5th September 1868 to Do.

* * * * * * *

4. My only object in asking this, is that the new system having at last been affirmed, for which I have contended, I may be put in a position to arrange the sequence of correspondence that has passed, and if Financial Commissioner sees no objection to the same, copies of these papers, along with the later letters of Punjab Government, conveying sanction on so important a question, might, in a revised printed form, be communicated for record and guidance to Revenue and Canal Officers, by whom this system has now to be carried out and perfected.

Extract of a letter No. 63, *dated* 24*th January* 1870, *from Secretary to Financial Commissioner Punjab, to Secretary to Gavernment Punjab.*

I am directed to forward for the orders of the Honorable the Lieutenant Governor, a letter from Mr. Prinsep, No. 211 of 13th December, in which he

requests permission to be allowed to retain his printed letter No. 215 of 20th April 1867, on official record.

* * * * * * *

4. Mr. Prinsep also requests permission to arrange the further correspondence that has passed, and to print a selection thereof for communication to Revenue and Canal officers.

5. The officiating Financial Commissioner recommends that Mr. Prinsep be asked to submit for approval a selection of the correspondence which he thinks might advantageously be published.

Extract of a letter No. 119, *dated* 16*th February* 1870, *from Secretary to Government Punjab, to Secretary to Financial Commissioner Punjab.*

In reply to your letter No. 63, dated 24th January, I am desired to communicate the approval of the Honorable the Lieutenant Governor to the retention by Mr. Prinsep, as an official record, of his revised letter No. 215, dated 20th April 1867, on the subject of water advantage revenue, and to your proposals in regard to the printing of a further selection of papers on the subject.

No. XXXIX.—REPORT ON CATTLE FAIR, SIRSA DISTRICT, 1871-72.

Copy of a letter No. 161, dated 21st November 1872, from Major C. A. McMahon, Officiating Commissioner and Superintendent, Hissar Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb.

In reply to your No. 6907, dated 3rd ultimo, I have the honor to forward a Report* on the Sirsa Cattle Fair by the Deputy Commissioner.

* No 255, dated 18th November 1872.

2. The rate charged is half an anna in the rupee ; but with reference to Mr. Melvill's para. 3, I do not recommend any present reduction in the rate.

3. Rewards should be given in future. This will be arranged in communication with the Deputy Commissioner previous to the next Fair.

Copy of a letter No. 255, dated 18th November 1872, from R. G. Melvill, Esquire, Officiating Deputy Commissioner, Sirsa, to Major C. A. McMahon, Officiating Commissioner and Superintendent, Hissar Division.

I have the honor to submit a report on the Sirsa Cattle Fair for 1872, called for in your No. 197 dated 8th ultimo.

2. From the accompanying statement it will be seen that the number of cattle brought to the fair this year was 6,936, and the number sold 5,252. The numbers fell off greatly in 1869, recovered in 1870,* and have decreased still further in 1871 and 1872. This is owing almost entirely to the Gúga Fair † in Bikanír coming off at the same time. This necessarily draws away a large number of cattle which would otherwise have come to the Sirsa Fair ; and moreover, abundance of wood and grass is obtainable there free of charge, and a uniform charge of 6 annas per head is levied on all sales. These attractions are only partially balanced by the greater security afforded by the Police arrangements in British territory. Influence is also exerted, certainly indirectly, if not directly, to prevent the Bikanír people from bringing their cattle to the Sirsa Fair. The exercise of such influence ought to be put a stop to ; and having the Fair 15 days earlier may have some good effect. Grass and wood are generally so scarce that it is almost impossible to afford the same advantages in respect to them as at the Gúga fair. Some arrangements, however, may be made to supply fodder at a cheap rate.

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* Owing apparently to there having been an unusual demand for plough bullocks that year.
† Re-established in 1869.

3. As regards the reduction of fees, the Municipal income depends chie[illegible] the receipts of the Fair, and cannot bear any reduction; the question is the[illegible] whether lower rates would necessarily reduce the income. I think they wou[illegible] because I am of opinion that the present rates are sufficiently low, not in themsel[illegible] to deter cattle dealers from attending the fair, and that therefore reducing the [illegible] would not attract larger numbers. The projected bridge across the Ghággar [illegible] do away with one of the difficulties the dealers have to meet in bringing [illegible] cattle in.

4. About one-fourth of the cattle belong to the Sirsa district, and [illegible] one-fourth to neighbouring districts. Bháwalpúr and the Rajputána States su[illegible] the other half.

5. The buyers principally come from Firozpúr, Ludiánah, Mírat, Alig[illegible] Farrakabád, Bijnaur, and other places in the North Western Provinces.

6. Rewards are desirable, in proportion to the number and quality of [illegible] cattle brought, for plough and draught bullocks, and for sheep, to encoura[illegible] improving of the breed, and bringing good animals for sale.

Statement showing number of Cattle brought and sold at the Cattle Fair at Sirsa, during the years 1866 to 1872.

Years.	Bullocks.		Buffaloes.		Ponies.		Camels.		Donkeys.		Goats.		Total Number.	
	Brought.	Sold.	Brought.	Sold.	Brought.	Sold.	Brought.	Sold.	Brought.	Sold.	Brought.	Sold.	Brought.	Sold.
1866,	24,953	21,953	1,635	1,335	40	32	8	6	10	...	28	...	26,674	23,326
1867,	13,000	10,769	1,500	1,026	41	30	3	1	...	...	...	...	14,544	11,826
1868,	15,275	11,775	339	229	30	22	12	8	3	1	3	2	15,662	12,037
1869,	7,600	5,576	63	43	30	22	10	5	12	8	5	3	7,720	5,657
1870,	17,000	13,854	110	88	45	33	24	16	3	2	8	8	17,190	14,001
1871,	7,430	5,426	50	34	50	33	15	10	5	3	8	5	7,558	5,511
1872,	6,400	4,885	350	250	70	49	6	4	10	7	100	57	6,936	5,252

SIRSA DEPUTY COMMISSIONER'S OFFICE,
The 18th November 1872.

(Sd). R. G. MELVILL,
Officiating Deputy Commissioner.

Copy of a letter No. 8355, dated 6th December 1872, from J. A. E. Miller, Esq., Secretary to Financial Commissioner, Panjáb, to Major C. A. McMahon, Officiating Commissioner and Superintendent, Hissar Division.

In reply to your No. 161, dated 21st ultimo, furnishing a report by the Deputy Commissioner, Sirsa, on the present year's Cattle Fair in that district, I am directed by the Financial Commissioner to observe that this report shews a considerable diminution in the number of cattle brought to the fair in 1872.

2. It is desirable to encourage those who bring good animals, by offering prizes as suggested by you. Local causes no doubt influence the number of animals brought to the Fair; and as the Sirsa district has during the last two years suffered from drought, and the people are in a somewhat depressed condition, the prospect of a poor market has probably kept many dealers away from the Fair this year.

4. The mode in which duty is levied at the Fair, is by a per-centage on the price of the animals sold. This method no doubt brings in more income, but it is doubtful if it promotes the prosperity of the Fair.

5. As the Fair is a small one, and as both yourself and the Deputy Commissioner do not recommend any change, the Financial Commissioner does not think any alteration should be made at present in the mode of levying the fees.

No. XL.—SYSTEM OF COLLECTION OF FEES AT CATTLE FAIRS.

From Edward O'Brien Esquire, Officiating Secretary to Financial Commissioner, Panjáb, to L. H. Griffin, Esquire, Officiating Secretary to Government, Panjáb, No. 1009, dated 12th December 1871.

I AM directed to submit, in original, for the information of His Honor the Lieutenant Governor, the accompanying docket No. 164, dated 21st ultimo, from the Commissioner, Amritsar Division, furnishing a report from the Deputy Commissioner, Siálkot, on the Gúlu Shah Cattle Fair held in that district on the 15th September last.

2. This Fair appears to be increasing in importance, and the arrangements made for it this year by the Deputy Commissioner seem to have been quite satisfactory; but the Financial Commissioner thinks the fees should be levied per head of animals brought to the Fair, and not on the price of animals sold.

From L. H. Griffin, Esquire, Officiating Secretary to Government, Panjáb, to Edward O'Brien, Esquire, Officiating Secretary to Financial Commissioner, Panjáb, No. 2032, dated 18th December 1871.

IN reply to your letter No. 1009, dated 12th December, forwarding in original, correspondence from the Commissioner, Amritsar Division, regarding a Cattle Fair in the Siálkot District, I am to remark that the Lieutenant Governor would wish the opinion of the local officers taken on the question of the levy of fees.

2. There is a great deal to be said in favor of a change, and fees being levied upon animals brought to the Fair, and not upon sales made. It may, also, be worthy of consideration whether the fees themselves could not more appropriately be collected by a respectable native official; and credited to the Government against the expenses of the Fair, than made over to a Contractor, who is more likely to abuse the authority entrusted to him.

From Lieutenant-Colonel C. H. Hall, Officiating Commissioner and Superintendent, Amritsar Division, to W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjáb, No. 78—532, dated 29th February 1872.

I HAVE the honor to reply to the questions contained in your letter No. 44, dated 2nd ultimo, regarding the levy of fees on animals brought to Fairs, &c., and to make the following remarks.

2. As regards the levy of fees per head instead of *ad valorem* on sales, the Deputy Commissioners of Siálkot and Gurdáspúr are of opinion that such a measure would diminish the number of Cattle brought to Fairs, for, as the Deputy Commissioner Gurdáspúr remarks, men do not object to pay a tax on money *made by a bargain.* The Deputy Commissioner of Amritsar is decidedly in favor of the measure, as fees levied in this way yield a larger and more certain income. In this opinion I entirely agree, and for the reasons stated,

3. As regards the second question, *viz*: whether the fees could not be more appropriately collected by direct agency rather than through a contractor or lessee, the Deputy Commissioners of Siálkot and Gurdáspúr are of opinion that they could not. The Deputy Commissioner of Amritsar is of quite the opposite opinion: he is in favor of direct management, and his opinion is based on the fact that the arrangements for direct management made by me when Deputy Commissioner during the last Dewali, produced a larger profit than had ever been made before, when the contract for the levy of fees was leased to a private individual. With this in point, and from my own experience of how the system of direct agency can be made to yield a larger income, and is productive of less trouble and annoyance to the owners of animals, I cannot but agree with the opinion of Captain Marshall.

I would refer you further to Mr. Halsey's and my reports on the Dewali Cattle Fair, No. 76—516, dated 28th February 1872, with enclosures, in which the subject is reported on in detail.

From W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjáb, to the Officiating Secretary to Government, Panjáb, No. 274, dated Lahore, the … March 1872.

I AM directed to submit, in original, a letter, No. 76, dated 28th … from the Commissioner, Amritsar Division, with enclosures, furnishing a report on the Dewali Cattle Fair held at Amritsar in November last.

Report on the Dewali Cattle Fair at Amritsar.

3. The most important changes in the arrangements at the fair were—

Three important changes in arrangements at fair noticed.

1st. The whole of the animals were registered.

2nd. A fee of one ana per head of cattle, and one rupee per camel was levied on each animal brought to the fair.

3rd. Animals were entered for competition for prizes by their owners; a fee was levied on each animal, and the prizes were awarded by marks, each animal entered being examined in turn by the judges.

4. The Committee of judges approve of the two first innovations, but think the third undesirable, though it gives satisfaction to exhibitors.

The two first approved of by Committee.

6. The plan of levying a fee of small amounts for each animal brought to the fair, instead of a per-centage on the prices realized on sale, appears a great improvement, and the arrangements for carrying it out were judicious and successful.

Levy of a small fee on each animal.

7. The plan of levying a fee on animals entered to compete for prizes is a good one. It keeps back worthless animals, and, as the prizes are of considerable value, it is reasonable that the owners who compete, pay for entering their animals.

Fee on animals to compete for prizes.

8. The Committee recommend that the rate be increased in the case of cattle, to two anas per head, and reduced in the case of camels to eight anas.

Increase on rate of fee on cattle and decrease on camels.

The Commissioner has not stated his opinion on this point. The Financial Commissioner thinks the fees should remain unaltered for the present.

Extract from a letter from Lieutenant-Colonel C. H. Hall, Officiating Commissioner and Superintendent, Amritsar Division, to the Officiating Secretary to Financial Commissioner, Panjáb, No. 76—516, dated Amritsar, the 28th February 1872.

* * * * * * *

4. Complaints were loud and universal on the subject of extortion and violence used by the contractor and his men at these cattle fairs, and disgraceful disturbances were constantly occurring. I, as, District Officer, thought it right to effect some improvement if possible.

5. I first made a careful calculation of probable assets by direct entrance fees, based on the very smallest number of cattle assumed to attend the fair, at the rates alluded to by Mr. Halsey; this I found would realize more than any contracts had, in previous years, particularly if it be taken into consideration that the net income was several times diminished by contractors absconding without paying up.

6. But a greater object than a mere financial result was to remove the pressure and oppression from the people who attended the fair.

7. My proposals when worked out, were laid before a Committee of Zaildars presided over by the Táhsildar. Their opinion was a highly favorable one. The proposed system was accordingly put into practice. The result was a complete success, and the main objects were fully attained, bringing in their train some minor advantages, showing that the system of a levy of direct fees is far preferable to the contract for fees on sales: but the system must be properly worked and supervised. The *modus operandi* here was as follows:—

8. Day after day as numbers increased it was proclaimed by beat of drum throughout the fair that fees on sales were abolished, but that instead, each owner would have to purchase a ticket at a certain rate without which he would be unable to pass his animals out of the fair, and that these tickets were procurable on application at the Katchery tent in the centre of the fair.

9. This proclamation, printed with the addition of prescribed rules and fees for competition and exhibition, and other matters connected with the management of the fair, were conspicuously put up all over it.

10. No one was bullied or interfered with.

11. In the Katchery tent sat selected Moharirs, men already in Government employ on good salaries, Darogahs, &c. supervised by Táhsildars and Naib-Táhsildars, and by the District Officer, who passed hours daily amongst the people at the fair to see the working of the system. Each clerk had a register, a box for tickets, and a box for money with a slit in the lid.

12. The tickets were counted out to each by the Táhsildar and the cash receipts with balance of tickets; and a comparison with the registers, were the checks imposed. The applicants for tickets were at times very numerous, but not one suffered any annoyance, and not a single complaint was made.

13. Numbers did not take tickets at first, but when they had sold cattle, left it to the purchaser to procure his exit ticket.

14. So well was it known throughout the fair that tickets were only procurable in this manner at the tent itself, that an impudent Táhsil chuprasi who had stolen tickets and tried to sell them for his own benefit was at once brought up for justice by some Malwa Jats.

15. In former years, under the contract system the number and description of cattle which attended the fair was not known. An approximation was made which was generally far above the mark. One consequent advantage of the direct fee system are the registers, which now furnish accurate statistical information regarding the fair.

16. I need say no more to show that the direct fee system, if properly ... ed, is much preferable to the contract for fees on sales.

17. The entrance fee for exhibition is so palpable an improvement on the ... way of doing business that it is useless taking up your time in discussing it.

18. By levying an entrance fee the competition becomes a real one. ... pends upon the will and pleasure of the owner, as well as on his opinion of ... animals; and many willingly pay one rupee to win Rs. 100, if they think they ... a good chance. No one is compelled to exhibit nor compete who does not ... do so, and these fees, which are entirely voluntary, swell the income.

Extract from a Report of the Committee on the Amritsar Autumn Cattle and Ca... Fair of 1871, bearing on the system of collection of fees.

THE Amritsar Autumn Cattle and Camel Fair of 1871 was remarkable ... several innovations. The chief of which were the following:—

Exit fees of one ana per head of cattle, and one rupee per camel, were ch... in lieu of taking one pie per rupee on sales of cattle and ... per cent. on sa... camels.

All fees were collected by Government direct and not farmed out as here...

Entrance fees of eight anas per head on cattle and one rupee on ca... competing for prizes were taken.

2. The change in the system of fees has been a financial success, an... much approved by dealers attending the fair:—

24,333 head of cattle paid one ana each,	... Rs.	1,520	13	0
1,613 camels paid one rupee each,	... ,,	1,613	0	0
234 animals for competition @ eight anas,	... ,,	117	0	0
Halwais and Bannias' stalls,	... ,,	158	8	0
TOTAL,	,,	3,409	5	0

The Committee believe that Rs. 2,400 was the largest amount ever col... under the old system.

6. At former fairs it has been the custom to farm out the right of coll... the fees on sales; very great complaints were made that the contractors took ... than their right from ignorant villagers; and the Committee have no hesitation ... saying that the great approval of the new system shewn by the dealers atten... the last fair arose from the fact that they knew the fees were being collected ... and honestly.

This was the first occasion when an entrance fee has been taken for ani... exhibiting for prizes.

8. The Committee will now make its remarks and suggestions on these in... vations. It is of opinion that a fee of two anas per head, may be taken on all ca... and eight anas on all camels, coming to the fair for the future. A fee of two ... per head would, under the old system of taking a pie in the rupee on sales, repre... an average value of Rs. 24 per head, which is greatly under the real val... the cattle coming to the fair; but, as the Contractor nearly always took a ... instead of a pie in the rupee, the increase of the fee to two anas a head cannot ... considered excessive.

The fee of eight anas a head on camels might be a tentative one; the Com... mittee are not sure that the reduction is necessary; at the last fair the demand ... camels was small, but had they been all sold, as they often are, a fee of one ru... per head would not have been felt.

From C. M. Rivaz, Esquire, Officiating Under-Secretary to Government, Panjáb, to the Officiating Secretary to Financial Commissioner, Panjáb, No. 587, dated Lahore, the 26th April 1872.

I AM directed to acknowledge the receipt of your letter No. 274, dated the 14th ultimo, and its enclosures, giving an account of the Diwali Cattle Fair held at Amritsar in November last.

3. The system introduced on this occasion for the first time, of levying a small fee on animals brought to the fair, in place of taking fees on sales, is reported to have worked well. His Honor considers the new system the more suitable of the two for large fairs, and sanction has been conveyed in a separate letter to your address to its being continued at the Amritsar and introduced at the Rohtak fairs.

The fees levied were one ana per head of cattle, and one rupee on each camel. The Committee suggest that, in future fairs, the rates might be altered to two anas per head of cattle, and eight anas on each camel; but the Lieutenant-Governor agrees with the Financial Commissioner in considering that the present rates should be maintained.

From Major C. A. McMahon, Officiating Commissioner and Superintendent, Hissár Division, to W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjáb, No. 17, dated 20th January 1872.

I HAVE the honor to reply to your No. 45, dated 2nd January.

2. With reference to the question whether the fees levied at Cattle Fairs should be collected by native officials, or whether the right to collect them should be sold to a Contractor, the District Officers of the Division have expressed conflicting opinions; the Deputy Commissioners of Hissár and Rohtak are in favor of collection by a native official, and my opinion coincides with theirs. The Deputy Commissioner of Sirsa, on the other hand, considers that "as the amount that will be "realized is very uncertain, it is better to let a contractor *run the risk*, as he has "not *much* opportunity of abusing his authority." In other words, Government is advised to put up to public auction that which in its pecuniary result to the auction purchaser depends very much on chance. This year the Sirsa Contractor lost about Rs. 6,600 on his venture.

3. The Deputy Commissioner Hissár remarks :—

"For the last two years the Hissár Cattle Fair has been under *direct* manage- "ment, the fees being collected under the supervision of the Táhsildar or Naib- "Táhsildar, assisted by a suitable establishment, and I am satisfied from past "experience, that this is a far perferable arrangement for many reasons to the con- "tract system."

4. The opinions of District Officers on the second question proposed, *viz.*, whether fees should be levied on *sales* or by a charge per head on animals brought for sale, are also conflicting. The Deputy Commissioner Rohtak would levy the fee on animals brought to sale, but remarks that the "fee levied per head must be so small as not to have the effect of deterring people from bringing their cattle." The Deputy Commissioner Sirsa would fix the fee "so small that owners of cattle would not take it into consideration;" but he would maintain *fees on sales* at a reduced rate *as well*. The opinion of the Deputy Commissioner Hissár is as follows :—

"*2ndly*, it is presumed that the same fee will be levied on cattle of different "value, in which case it would perhaps be considered unfair that the owner of a

"bullock worth Rs. 15 or Rs. 20 should pay as much as he whose animal is w[orth]
"Rs. 100 or more."

"*3rdly*, it sometimes now happens that cattle brought for sale change h[ands] "at the fairs two or three times, being bought and sold by other parties, wh[o on] "*each occasion* pay the prescribed fee. By the proposed arrangement, this could [not] "be done, and there would consequently be a loss of revenue.

"Finally, as regards the Cattle Fair here, many cattle owners who resi[de in] "the neighbouring villages bring their cattle every day to the Fair, and take "those unsold to their homes, to be brought back again the next day as long a[s the] "Fair lasts. According to the new system this would be impracticable, as it w[ould] "be difficult to identify them, and would lead to many abuses if permitted.

"The system now in force has worked very well heretofore, and the tax is v[ery] "fair in its incidence, only affecting those who have been fortunate and succe[ssful] "in disposing of their cattle. I therefore think unless some very strong rea[sons] "can be urged in favor of the proposed change, the practice which has hith[erto] "obtained should be permitted to continue."

From Philip H. Egerton, Esquire, Commissioner and Superintendent, Râwalp[indi] Division, to W. M. Young, Esquire, Officiating Secretary to Financial Com[mis]sioner, Panjáb, No. 43, dated 3rd February 1872.

In reply to your No. 43, dated 2nd ultimo, I have the honor to forward re[ports] as noted in the margin,* received from the Deputy C[om]missioners of Ráwulpindi and Shahpúr, in which d[istricts] there are Horse and Cattle fairs.

* From Deputy Commissioner, Ráwulpindi, No. 128, dated 26th January 1872.
From Deputy Commissioner, Shahpúr, No 45, dated 19th January 1872.

2. I have not by me the statistics of last cattl[e fair] to refer to, but I am inclined to think that it is n[ot ex]pedient to introduce a tax upon all animals as a su[bsti]tute for tax on sales. The tax per head must be v[ery] low or it will deter people from bringing their animals. I would not put it at m[ore] than 4 anas per head on horses and less on other cattle.

3. But if kept at this low rate it might supplement the tax on sales, a[nd] would allow of that tax being reduced.

4. With regard to collection, a fixed rate per head might be most satisfacto[rily] collected by Government officials, but the tax on sales is best collected by a Co[n]tractor, for two reasons :—

1*st*. Because he has means of ascertaining the real price paid, which a Gov[ern]ment official would not have, and the latter would be taken in.

2*nd*. Because the Contractor, having no authority, cannot do anything a[rbi]trarily. He depends on his correct information of sale prices, and if he attem[pts] to collect on more than has been paid he is resisted.

The Táhsildar not having such good information would be likely to ass[ume] probable prices and to collect accordingly, when the sellers mentioned prices wh[ich] were manifestly under the mark.

5. Any mistake thus made by the Táhsildar would be taken as an offi[cial] act, could not be resisted with the same ease, and would bring unpopularity o[n] Government officials.

6. I recommend that the system introduced last year may not be chang[ed] this year at the Ráwulpindi Fair, but the result be awaited as suggested by Ma[jor]

Urmston, and if future change seems desirable that it be ordered soon after the Fair, so that intimation of it may percolate through the people before bringing their horses to the Fair of 1873.

From W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjáb, to L. H. Griffin, Esquire, Officiating Secretary to Government, Panjáb, No. 275, dated 14th March 1872.

In reply to your No. 2032, dated 18th December last, relative to the system which it is most desirable to adopt for the levy of fees at Cattle Fairs, I am directed to intimate that the opinions of the Local officers have been taken, and with the exception of the Deputy Commissioners of Amritsar and Rohtak, all are in favour of the existing system of levying fees on sales established under this office Book Circular VII of 1867.

2. The proposal in my letter No. 1009, dated 12th December 1871, related to Cattle Fairs and not to Horse Fairs. Ráwulpindi being chiefly a Horse Fair may be excluded from consideration.

3. The Fairs at Rohtak and Amritsar are very large and important ones. The system of payment by head of cattle will be successful at a large fair, while at a small one more money will be taken by a per-centage on the price of the animals sold; the Financial Commissioner would therefore allow the existing system to continue in Siálkot, Gurdáspúr, Hissár and Shahpúr.

4. Mr. Egerton thinks, however, that the system of fees per head is capable of being better regulated than that of per-centage on price, and for this reason it seems desirable to introduce it, more especially in large fairs. Mr. Egerton therefore allows it to be continued at Amritsar and introduced at Rohtak as the Deputy Commissioner desires it. The Financial Commissioner would draw attention to the report submitted with this office No. 274 of this day's date on the method adopted for realizing fees at the Dewali Fair, Amritsar, in 1871, under the orders of the Deputy Commissioner, Colonel Hall,* as an instance of successful management of the fee system.

From Lepel Griffin, Esquire, Officiating Secretary to Government, Panjáb, to W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjáb.—No. 582, dated 26th April 1872.

I am directed to acknowledge the receipt of your No. 275 of the 14th ultimo, reporting further on the subject of the levy of fees at cattle fairs.

2. In reply I am to state that as all the local officers connected with the Financial Commissioner, have, with the exception of the Deputy Commissioners of Amritsar and Rohtak, expressed themselves in favor of retaining the present system of levying fees on sales, and as the Financial Commissioner recommends that this system be continued at all the smaller fairs, and that the system of leying fees upon animals brought to the fair be only carried out at the large fairs of Amritsar and Rohtak, His Honor the Lieutenant-Governor consents to the Financial Commissioner's proposals.

3. I am, however, to request that the Financial Commissioner will be good enough to continue to give his attention to this subject, and that he will propose a further extension of the latter system, whenever he thinks it may with advantage be substituted for the system of fees on sales.

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* See page 353.

XLII.—THE SUPPLY OF SHEEP IN THE PANJAB.

From the Superintendent, Hissár Cattle Farm, to the Superintendent of Studs, Mussoorie, No. 145, dated 12th August 1872.

I have the honor to acknowledge the receipt of your office No. 836, dated the 31st of July 1872, and beg to state that the various importations of Rams and Ewes was as follows :—

FROM ENGLAND.

2 South Down Rams in March 1864.

6 Leicester Rams in December 1864.

9 Leicester Ewes in December 1864.

FROM AUSTRALIA.

2 Merino Rams (Long Horns) in March 1868.	
1 Merino Ram (Short Horns) in	Do.
2 Cotswolds Rams	Do.
2 South Down Rams	Do.
1 Leicester Ram	Do.

2. The annexed statements will shew the experiments and crosses that have been tried, and the number and breeds of the present stock now at the Farm, together with a total of the births, deaths, &c. since the commencement of the sheep breeding.

3. The original breed commenced with the cross between the imported South Down Ram and the Bikanír Ewe, and with the Rams imported from Australia in 1868, the breed has been kept up. The cross between the South Down and Leicester Ram and the Bikanír Ewe and their produce seem to be the best, being short legged, well shaped, compact and fleecy animals.

4. The Leicester cross though woolly is long, large and leggy. The Merino cross is considered too small. Fourteen Bikanír Ewes were tripped by an Affghan Doombalo, but the cross did not seem to answer.

5. The statement annexed will fully answer the 2nd para. of your letter under reply shewing—

89 Rams now ready for distribution.			
200 Rams expected to be ready in October 1872.			
150	Do.	Do.	October 1873.
150	Do.	Do.	October 1874.

6. The sheep are in pens. They are sent out during the day to graze about 80 in a flock and at night the Rams are turned in with them. They are weeded twice a year as also shorn, and the rejected ones and wool being sold for the good of Government. The former fetch a very bad price here indeed but the latter is increasing in value every year.

7. I regret I am unable to answer your para. 8, for once the Rams leave the Farm nothing is again heard of them.

P. S.—In reply to para. 5 of your letter, I would state that a Bikanír Ewe is the only country Ewe that has been purchased for sheep breeding at the Farm.

Statement shewing the number and different Breeds of sheep at the Government Ca[ttle] Farm at Hissár.

Number.	Sex.	Breed of Ewe from which the animal was got.	Breed of Ram from which the animal was got.	Rem[arks]
			Ewes.	
34	Ewes,	½ Leicester, ...	Merino Rams, ...	The Ewes have 41 Male and 73 Female Lambs
31	do.,	½ South Down, ...	Cotswolds Rams, ...	
60	do.,	Bikanír, ...	Bikanír, ...	
25	do.,	Bikanír, ...	½ Lec. out of ½ S. D. Ewes,	
49	do.,	Bikanír, ...	South Down, ...	
275	do.,	2nd Cross South Down,	South Down, ...	
1	do.,	Bikanír, ...	Cabúl Ram, ...	
75	do.,	Bikanír, ...	Leicester Ram, ...	
47	do.,	½ South Down, ...	South Down, ...	
		Making a Total of 597 Ewes.		
			Rams.	
3	Rams,	½ Leicester, ...	Merino Rams, ...	80 of these Rams are now available for District purposes.
1	do.,	½ South Down, ...	Cotswolds, ...	
2	do.,	Do. Do., ...	Half Leicester, ...	
2	do.,	2nd Cross South Down,	South Down, ...	
19	do.,	Bikanír, ...	Do. Do., ...	
4	do.,	Bikanír, ...	Leicester, ...	
48	do.,	Bikanír, ...	½ South Down, ...	
7	do.,	Bikanír, ...	½ Leicester, ...	
10	do.,	3rd Cross South Down,	Leicester, ...	
11	do.,	½ Leicester, ...	South Down, ...	
		Making a Total of 107 Rams.		
			Male Lambs.	
45	Male Lambs,	Bikanír, ...	South Down, ...	Two hundred of these Lambs will be ready for district use in [illegible]
95	do.,	3rd Cross South Down,	Do. Do., ...	
22	do.,	½ South Down, ...	Cotswolds, ...	
51	do.,	½ Leicester, ...	Leicester, ...	
52	do.,	Bikanír, ...	½ Leicester, ...	
12	do.,	½ Leicester, ...	Merino, ...	
8	do.,	½ Leicester by Merino,	½ Leicester by Merino,	
66	do.,	½ Leicester, ...	½ Leicester, ...	
40	do.,	Bikanír, ...	Cross between ½ Lec. Ram and ½ S. D. Ewe,	
63	do.,	Bikanír, ...	½ South Down, ...	
70	do.,	3rd Cross South Down,	Do. Do., ...	
		Making a Total of 524 Male Lambs, ...		

Number.	Sex.	Breed of Ewe from which the animal was got.	Breed of Ram from which the animal was got.	REMARKS.
		FEMALE	LAMBS.	
51	Female Lambs,	½ Leicester, ...	½ Leicester, ...	When old enough these will be transferred to Ewes.
9	do.,	Bikanír, ...	Cross between ½ Lec. Ram & ½ S. D. Ewes,	
31	do.,	3rd Cross South Down	South Down, ...	
101	do.,	Do. Do., ...	Half bred South Down,	
71	do.,	Bikanír, ...	Do. Do., ...	
13	do.,	Bikanír, ...	South Down, ...	
32	do.,	Bikanír, ...	½ Leicester, ...	
6	do.,	½ Lec. by Merino, ...	½ Leicester by Merino	
5	do.,	½ South Down, ...	Cotswolds Rams, ...	
3	do.,	½ Bred Cabúl, ...	½ South Down, ...	
		Making a Total of 322	female Lambs.	

Note.—162 Half South Down Ewes were transferred to the Stud Departments at Haupper and Saharunpúr.

Statement shewing the total number of births, deaths &c. of sheep at the Hissár Cattle Farm since the commencement of sheep Breeding.

YEAR.	Number of Lambs Born.	Number of Lambs Died.	Number sent out for district purposes.	Number of Lambs Sold.	REMARKS.
1864–65,	60	2	...	...	The distinction in Returns between Female Lambs and Male Lambs, has only been commenced two or three years ago. Hence the Office Records do not shew the Sex of the Lambs that were born, died, sold &c., &c.
1865–66,	202	14	...	50	
1866–67,	404	26	18	18	
1867–68,	380	28	58	...	
1868–69,	850	57	49	...	
1869–70,	598	61	89	317	
1870–71,	901	131	22	296	
1871–72,	580	156	...	184	

WOOL SOLD DURING THE LAST FIVE YEARS.

Year.	Quantity of Wool sold.			Amount received for Wool.		
1867,	23	3	...	249	11	...
1868,	34	14	15	407	14	...
1869,	26	3	...	369	10	...
1870,	25	30	...	326	3	...
1871,	117	31	...	1,555	1	6
Total,	227	1	15	2,908	7	6

SHEEP SOLD DURING THE LAST FIVE YEARS.

Year.	Number of sheep sold.	Amount received for the sheep.			Total amount in each year realized by wool and sheep.		
1867,	...	...	...	...	249	11	...
1868,	...	...	...	...	407	14	...
1869,	346	276	15	...	646	9	..
1870,	299	380	14	...	707	1	...
1871,	568	658	7	9	2,213	9	3
Total.	1,213	1,316	4	9	4,224	12	3

Keep of sheep during the last five years.

YEAR.	Cost of each years keep.			
1867,	1,030	3	3	Total amount realized during 5 years for wool, sheep &c., Rs. 4,224-1[illegible]
1868,	1,750	4	11	Total amount expended in keep for 5 years, ... „ 8,127-[illegible]
1869,	1,931	5	1	Difference between two sums, „ 3,902-[illegible]
1870,	1,605	2	7	
1871,	1,810	3	5	
TOTAL, ...	8,127	3	3	

From Captain G. F. Graham in charge of Hissár Cattle Farm to the Superinten[illegible] of Studs Mussoorie No. 166, dated 23rd August 1872.

In reply to your Office Docket No. 930, dated 19th August 1872, I have [illegible] honor to state that :—

1st. The South Down cross and their produce appear to carry the gr[illegible] value as regards breeding, hardiness, wool ; are more prolific, and seem to stand [illegible] climate better.

2nd. The Leicester cross is good for wool, but leggy : and suffer much fr[illegible] the heat.

3rd. The Cotswolds cross is good for wool but weakly and suffer very m[illegible] from the heat and more than the other breeds.

4th. The Merino cross is very small for breeding purposes, and the w[illegible] appears in the 2nd cross to loose its silkiness, and suffer much from the effects of [illegible] sun.

2. I hope the above will furnish the information called for. Mutton and w[illegible] being considered the great points, the latter seems to be fetching a larger rate e[illegible] year, but the relative value of the breeds as regards mutton and fat is difficult [illegible] report upon, as the sheep are not killed.

MEMORANDUM BY F. HALSEY, ESQUIRE, AMRITSAR.

Dated 25th October 1872.

To column 2 of the Secretary Financial Commissioner's form, I am unable [illegible] give an answer, neither am I able to reply categorically to Nos. 3, 4 and 5. In 187[illegible] I had however purchased 129 sheep (up to date) or against 142 in 1871 and 321 [illegible] 1869, the average cost per head has been Rs. 3, Rs. 2-9-7 and 2-8-0 respectively shewing an increase of nearly 20 per cent.

Column 6—Consumption of mutton by natives.

There is little doubt to my mind, that there has been a very large increase [illegible] consumption by natives of late years ; but to what extent I cannot even guess. Th[illegible] returns from the local slaughter houses should shew this.

Mortality by diseases.

I have not heard that there has been any great mortality from disease, but I have been informed that numbers of sheep have died from starvation during the last three years. *At the present moment* there is, undoubtedly, considerable disease in the neighbourhood of Amritsar, but not more than is found in season when the rain fall has been considerably above the average; in 1869, a season of late rains, there was disease also.

Grazing grounds.

Immediately in the neighbourhood of Amritsar, in fact, any where within the influence of the canal, grazing grounds have been ploughed up to a very large extent. I am speaking from my own observation, within the last four years, but in my opinion there need be little alarm on this head, as most assuredly much of this land will soon revert to its normal state of scrub-jungle, as it never can stand two crops a year, and those, the same description of crop, taken year after year, as is now being done.

Diminution of supply and its causes.

I should say that an increased consumption and want of grazing ground were the immediate causes for a short supply in the *neighbourhood of Amritsar*, but I should doubt there being a great diminution of sheep taking the country collectively.

Remedies suggested.

The most practical remedy is, to pay more for our sheep, it may take a year or two, but make it worth the shepherds while and more sheep will appear, but at present prices of meat and wool, it is far more profitable to keep a sheep alive than sell it to the butcher. The present price of wool is Rs. 20 a maund, the rate in 1869, was Rs. 10 a maund, and even cheaper. Shepherds in debt may sell an animal for Rs. 2 and Rs. 2-8-0 which brings them in Re. 1-0-0 a year, but it is highly improbable that independent and provident shepherds will sell an animal at the above figures which will bring them in Rs. 5 or 6 and still be worth its Rs. 2-0-0 or Rs. 2-8-0.

Any one, who has travelled over the vast sheep walks of the Panjab, I refer to Chumba and British Lahoul, will there see, with his own eyes, how averse the shepherds are to sell their sheep and there is no want of them there. I suppose they can be counted by millions, and why, because wool is cheaper than Rs. 20 a maund and is sold and manufactured on the spot. If Government wish to have cheap mutton, it is towards British Lahoul their attention should be turned, for although the number of sheep to be found there every summer is already immense, nevertheless, that quantity is as nothing in comparison to the grazing ground available. Considerable numbers of these sheep are brought to Amritsar every winter, and there is a remarkable thing to be observed about them, they are all full mouthed *i. e.*, approaching the time when they will no longer yield an annual income, as when once the sheep has reached its prime the quantity of wool decreases. Let the local sheep brought to market be examined and it will be found few have more than 4 teeth. The reason for this has not to be looked for far, the hill shepherd is a well to do man, owing no one any thing, the plain shepherd on the contrary owns a few half-starved animals and owes more than he can ever sell them for.

From Colonel H. W. H. Coxe, Commissioner and Superintendent, Hissár Div... to J. A. E. Miller, Esquire. Secretary to Financial Commissioner, Pa... No. 176, dated the 14th December 1872.

Supply of sheep.

* *Hissar* No. 384, dated 4th December 1872.
Rohtak, No 331, dated 9th Idem.
Sirsa, No. 263, dated 4th Idem.

With reference to your Circular No. 51, dated 5th October 1872, I have ... honor to forward herewith the repli... of the Deputy Commissioners of t... Division on the general subject of ... supply of sheep, and also a rep... which has been kindly furnished me ... the Superintendent of the Cattle Farm, Hissár, bearing on the particular subje... sheep breeding carried on by him.

The causes which have led to the diminution in the number of sheep.

2. On the main topic, the supply of sheep, the Deputy Commissioner S... reports, that there has been no sensible diminution ... the number of sheep in his District; while the Dep... Commissioners of Hissár and Rohtak both remark on ... decrease in their respective Districts, the former at... buting the falling off to successive years of drought, and to deficiency of pas... consequent on increasing cultivation—and the latter, assigning the latter ca... and in some measure increased consumption of mutton among the natives. T... present cost of the sheep appears to bear out the general correctness of the a... statements, for while in Sirsa, where no deficiency is reported, the price has ... risen from Re. 1-8 to 1-13-8 in the ten years; in Rohtak and Hissár the increas... price has been nearly 100 per cent.

Sheep Fairs and how they should be managed.

3. The main remedy suggested in all three Districts, is the establishm... of sheep Fairs at which prizes should be distrib... to the exhibitors of the best stock; and I ag... with the Deputy Commissioner Hissár, that a stan... number should be fixed, below which prizes should not be given. There would ... little difficulty in arranging this, as cattle Fairs are holden in all three Distri... and the exhibition of sheep might take place at the same time.

Deputy Commissioner of Rohtak's proposal of giving prizes and advances.

4. The Deputy Commissioner Rohtak states that the principal sheep kee... in his District are butchers and men of inferior c... who have not the means of carrying on sheep bree... on a large scale, and who experience great difficulty ... finding pasture for their flocks, from the consta... increasing area of cultivation; and he proposes that encouragement should ... given them by the distribution of prizes as above noted, and by making th... money advances.

Money advances to sheep breeders, why not desirable.

5. I doubt the advisability of the latter scheme. Men of the class describ... by Deputy Commissioner are not likely to be in a po... tion to furnish good security for the repayment of mo... advanced, nor would there be any guarantee, beyond ... distant hope of profit, which would not weigh much with men who live from ha... to mouth, of the advances being properly applied.

Government intervention in the matter of supply of sheep will be necessary.

6. It appears to me that the active interventi... of Government will be necessary to provide against ... possible serious falling off in the supply of so importa... a commodity.

The simple establishment of Fairs will not have the desired effect.

7. The establishment of Fairs will doubtless have some effect, but it will ... a long time before it is readily appreciable, and if th... deficiency of pasture is of so grave a character as repr... sented, and liable, if the cause assigned for it be corre... to become greater every year, the sheep breeders of th...

part of the country will not be able to raise, or to maintain flocks of sufficient size to present at the annual fairs.

Proposal as to how facilities for pasture can be given to the sheep breeders.

8. Facilities for pasture appear to be the first and principal requirement to ensure an increase in the number of sheep throughout this part of the country. I have been so short a time here that I am not in a position to speak with certainty on the subject, but I presume there must be abundance of waste land in the Division claimable by the Government, and in that case I would suggest that grass preserves should be formed and made available for sheep pastures. A small rate per head or per flock in a decreasing ratio to the number, would probably meet the cost of a small establishment for watch and supervision, and much assistance might be given, in this Division at least, by the occasional distribution of rams from the Government Cattle Farm at Hissár.

Without provision for pasturage the supply of sheep will ere long, be diminished.

9. I have only thrown out the above suggestion roughly. It might be easily elaborated I imagine, but I feel assured that without some provision for future pasturage there will be, ere long, a very appreciable diminution of the quantity and of the quality of the sheep throughout the province.

Sales of Wool.

10. The sales of Wool appear to be very limited, Hissar shows an export of 760 maunds in 1872, against 960 in 1871, while in Rohtak the out-turn was only 150 maunds, but against this is the statement of Wool sold last year at the Cattle Farm, which exceeded the sales of the previous 4 years. This shews that there is an increasing demand for the commodity, and should furnish a motive for enhanced exertion to the sheep breeders. The present price of Wool is Rs. 29 per maund, and the Superintendent of the Cattle Farm informs me that a sheep will produce about one sér per annum on an average.

Average price of sheep.

11. It will be noticed that the average price of sheep sold at the Cattle Farm during the last two years is very little over a rupee, but only the inferior and rejected animals are sold, and the Superintendent informed me that he showed some of these animals to a dealer from Dehli who would not take them at any price.

Bikanír Sheep.

14. I have only to notice in conclusion that the neighbouring tract of Bikanir is remarkable for the number of sheep it produces, and for their quality. It is to Ewes of this breed that the imported Rams are principally put at the Cattle Farm, and the produce is held in high estimation.

From Lieutenant Colonel C. H. Hall, Deputy Commissioner, Amritsar, to General R. G. Taylor, C. B., C. S. I., Commissioner and Superintendent, Amritsar Division, No. 20, dated 21st January 1873.

I have the honor to submit the report on the supply of sheep in the Amritsar District called for by Financial Commissioner's Circular No. 51 of 1872.

2. The subject, being an important one, I did not wish to submit a report based merely on Tahsildars' returns. I consequently postponed its submission until I could make personal observations in the District.

3. The accompanying return will show the approximate number of sheep in the district and the range of prices from 1863 to 1872. In ten years the price has increased 50 per cent. but this is not greater than the rise in prices generally. From personal observation, I should say that the number entered in the return is

rather under than over the mark. There are flocks of sheep in almost every village. The breed is a bad one; they are long legged, long tailed animals with coarse wool and do not promise good mutton.

Consumption of mutton by natives.

4. In the District the consumption of mutton has increased amongst the population of late years, but not to such an extent as to affect the supply. The consumption in the city of Amritsar however is very great. It amounts in round numbers, to 25,000 sheep per annum. The statistics for the city of Amritsar are interesting, I am indebted for the greater part of these to Mr. Nicholl, Superintendent of Meat Markets of whose memorandum on the subject, I append a copy. Some years ago there were only [illegible] Hindu and 50 Mahammadan butchers' shops in the city for sale of mutton, whereas now there are 10 of the former and 250 of the latter. I also submit a memorandum from Mr. Halsey on the subject to whom I also applied for such information as he could give me. Many points alluded to by him are borne out by personal knowledge of the matter and by the reports of natives in the interior of the District.

Mortality by disease.

5. This takes place in the rainy season; great losses occur every 2 or 3 years from this. The last occasion was in 1870-71 when sheep died from small-pox and rot in great numbers. Losses from actual starvation occur frequently. It is only the poorer classes who, as a rule, keep sheep, and when no grazing is obtainable, they having no means to feed their sheep, let them die.

Grazing grounds.

6. These are very limited in this District, all lands capable of production have been ploughed and Government Rukhs are not available.

Diminution of supply.

7. The diminution in the District is according to all accounts not very remarkable, but it must be noted that the supply of sheep for mutton is drawn from elsewhere; such diminution as has taken place is therefore, not due to increased consumption, but to the want of grazing grounds. In places where sheep are procured for consumption I should with other causes ascribe a diminution in the supply, to the increased prices of wool which prevent the owners from selling their animals to the butcher.

Remedies suggested.

8. Good prizes at fairs for the best score, 2nd best score, best single ram and ewe; these have not, hitherto, been given. Prizes have been offered for sheep at the Amritsar cattle-fairs, but very small amounts and have not attracted many competitors.

The result was so follows :—

						Sheep exhibited.
Baisakhi fair,	...	...	1871,	...	...	3
Diwali ...	...	...	1871,	...	...	4
Baisakhi, ...	...	...	1872,	...	...	5
Diwali, ...	...	...	1872,	...	...	2

These were Hill, and not District sheep. I would further propose that a system of advances be introduced to induce people to keep large numbers of sheep, security could be taken, and the flocks periodically inspected, the advances being repaid by degrees. I found this system answer admirably on a small scale in a District where the demand for fowls exceeded the supply greatly. In two years the District was stocked with fowls.

9. If such a system were introduced facilities for grazing should be afforded to shepherds.

Export.

10. Very little indigenous wool is exported from the District and that only white wool, in small quantities, but wool is brought in large quantities from Chamba, Kangrá, &c., and then re-exported to Bombay for shipment.

Statement shewing supply of sheep in the Amritsar District.

1	2		3	4	5	6					
District.	Probable number of sheep in the District.		Average price of male sheep per head in 1872.	Price in 1868.	Price in 1863.	Remarks regarding.					
	Male.	Female.				Consumption of Mutton by Natives.	Mortality by Disease.	Grazing grounds.	Diminution of supply and its causes.	Remedies suggested.	Statistics of export of wool.
Amritsar,	11,000	17,000	Rs. 3	2-8	2	*Vide* Dy. Comm r's. No. 20, dated 21st Jany. 1873.					

From Major C. A. McMahon, Deputy Commissioner, Dehli, to Lieutenant Colonel J. E. Cracroft, Commissioner, Dehli Division, No. 70, dated 23rd January 1873.

I have the honor to reply to your No. 12 of the 13th instant.

2. The following land might be made available for a sheep farm at Dehli—

I.	Old cantonments,	1,606	Acres.
II.	Land adjoining Do. beyond Nujjufgarh Jheel escape,	129	do.
III.	Under Military at Do.	191	do.
IV.	Under Forest Department in bed of River Jamna,	893	do.
		3,019	do.

3. Nos. I and II are in charge of the District Officer, No. I has yielded an average income from grazing of Rs. 1,128 per annum from 1867-1868 to 1871-1872. This income would of course be lost if the land was used as a sheep run.

4. No. III is under the Military. Part of it is used as a Ball pratice ground and part as an encamping ground. The authorities derive an income from grazing. They would no doubt be willing to rent this land to the Civil Department subject to its occasional use by them.

5. No. IV is under the charge of the Forest Department. It was made over to them about 3 years back for the formation of a Keekur plantation. Unless this land is properly managed, it is likely to become a nuisance to the station. I do not object to a Keekur plantation, on the contrary, I think, a plantation properly cared for, would be beneficial to the station; but it is indispensably necessary, that it should not be allowed to became a dense rank jungle of bushes and long grass. This would be objectionable from a Sanitary point of view and the jungle would moreover harbour wild beasts. It has already done so and a fine panther was shot the other day within a couple of hundred yards of your house.

6. The Forest Department should be required either to keep the plantation in proper order or to give it back to the District Authorities. In either case the

land should be made available for the grazing of sheep in the event of a Farm be established at Dehli.

7. I think the lands above detailed would constitute a good sheep Farm. Th plots adjoin each other and they are close to Dehli. The latter is a material p with reference to the supervision of the Farm, and the sale of the sheep raised on estate.

8. I see no reason why a sheep farm should not prosper at Dehli and be p ductive.

9. I think the Bikanír stock should be introduced and I deprecate the in duction of English Rams.

10. The importation of English Rams is exceedingly expensive. The of importation is very considerable, whilst the Rams will I believe rarely live thro the hot winds.

11. I also doubt whether the English Cross is to be desired. It may improve wool. Upon this point I have little information as the experiments at Hissár h not been conducted on scientific principles and no record of results has been k up at the Farm there.

12. I apprehend moreover that the principal object the Panjab Govern has at present in view is to raise mutton. Upon this point I am under a d impression that the mutton of English half breds is not as good as that of Bikanír sheep. I have kept both at Hissár and found the flesh of the half En sheep was more coarse and stringy than that of the pure Bikanír sheep. The la yields fine and good flavoured meat.

13. The Bikanír sheep is a fine animal and is one likely to thrive o Western Bank of the Jamna.

14. The statement forwarded with your letter is herewith returned.

From George Davies, Esquire, Lahore, to J. W. Smyth, Esquire, Deputy Commiss Lahore, dated 28th January 1873.

In reply to your letter No. 186, dated 27th January 1873, enquiring whe the sheep farm established by me some years ago had succeeded or not, I have t honor to state, with regret, that it was a complete failure; to prevent misap hension, however, I will endeavour to explain briefly the circumstances which l to this result.

When I conceived the idea of a sheep farm I made known my proposal to t late Sir Donald McLeod and Mr. Roberts, both took an active interest in the pr posal and offered me every assistance in their power.

Being anxious to assure the Government that I was thoroughly in earnest, purchased at once 1,000 ewes, I had them most carefully selected from the b breeds in the Gujránwála, Gujrát, Shahpúr and Firozpúr districts; they were v fine animals, short ears, bright eyes, moderately straight backs and small bellies, paid an average of Rs. 3 each for them.

During the time that I was searching out suitable pasture land I placed t sheep in the Rukh running from the village Gurmut on the Multán line of Railw to the 8th mile Firozpúr road. In a very short time the grass failed, but foolishly kept them there until I could fix upon a suitable place. I experien considerable difficulty in getting land adapted to my purpose, many of the Rukh that I applied for being either Forest land or promised to the late Mr. Landel meanwhile the animals being only half fed were getting thinner and thinner dai At last I fixed upon "Ouluck," it had many disadvantages, the greatest w difficulty of getting water. In regular course it was made over to me on e

terms for ten years (the average receipts from grazing of the preceding five years) I immediately had the sheep removed, but it was too late, they were already from bad pasture and from the heavy rain that fell that year, suffering from a complication of diseases, and amongst the number, foot rot, on the way down to Oulnck I lost 200 ewes although they were taking very short stages daily and fed with Bhoosa, I at once, when I discovered the disease, separated the healthy from the sick. But it seemed to have pregnated the whole flock and they all died out within a year. In the meantime I had erected sheds and enclosures and had received 10 Rams from the Hissár farm. Believing that the farm only needed proper management to ensure its success I bought up 800 more ewes, but this time from the Lahore District chiefly, as I thought it possible that the removal from one part of the province to the other may have affected them. The last lot throve very well for the first year and at one time I had 600 lambs, apparently healthy and strong, all the offspring of the Hissár Rams. The improvement in the breed was patent to every one. The shape of the lambs was decidedly better than their dams, the wool larger and more curly, the eyes brighter, and the backs straighter than any sheep in the district, so marked was the improvement that the zemindars gladly offered payment for the use of the rams for their own sheep. I was at this period so sanguine of success, that I obtained permission from Mr. Griffin who was at the time Deputy Commissioner of the District, to raise crops on part of the land for my own use, I had also collected quantities of Bhoosa and hay, but after a month of almost constant rain, the same disease that carried off the first lot made its appearance amongst the second. It began with the lambs. I have followed them through the Rukh the whole day watching the effect of the disease, and endeavouring to counteract the disease by stimulating food, &c. yet in spite of every effort, good protection and abundance of Bhoosa, with black salt and baths, they died 100 and more daily. When the disease first made its appearance, I at once removed the apparently healthy ones from the sick and erected sheds some three miles away to which I removed all the healthy, but nothing seemed to do them good. They would leave the sheds in the morning after the sun was well up (when it rained I kept them under cover, all day feeding them with Bhoosa) and suddenly without any previous notice they would be seized with a violent purging of a black substance, after a short time they would stagger and die from shere exhaustion. I brought in some of the livers, and Doctor T. E. B. Brown very kindly examined them for me, but they were apparently quite healthy. Within two months my stock was reduced to 200. I again made them up to 500 ewes, but they never seemed to thrive. My funds being exhausted I reluctantly sold the 220 that were left for Rs. 200 and returned the land to Government.

I attribute my want of success to two causes mainly. My eagerness in purchasing a large stock of sheep without having first prepared for their reception and pasture although fed with Bhoosa, they needed more space and pasture, secondly my inability to be always present myself, and although I had a large number of trustworthy servants, they were quite incompetent to manage so large an undertaking. My second failure, is owing I think to my not having removed the new stock to a new place, and lastly want of funds to withstand a series of losses quite beyond my temperament to contemplate. I am still firmly of opinion that sheep breeding can be carried on successfully, with profit to the individual and the Province, if some one with more time experience and money than I possess took to it heartily.

If there is any further information that I can afford you at any time, I shall be always happy to do so. In conclusion I will merely remark that so satisfied am I of the ultimate success of sheep breeding in the Panjab that I will again (as soon as I can manage to save some funds) renew my experiments on a smaller, but I am sanguine enough to believe, more successful plan.

From Major General R. G. Taylor, C. B., C. S. I., Commissioner and Superint... Amritsar Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjab, No. 39—288, dated 7th February 1873.

In reply to your Circular No. 51, dated 5th October 1872, I have the h... to submit the District reports regarding the supply of sheep, in original, a... offer the following remarks :—

2. I consider it clear from the District reports that the evil apprehended e... to a certain extent in this Division, and may increase.

I allude to a diminution in the supply of sheep for mutton.

But I cannot help thinking that a remedy is not far off. The mountains ... fringe the Panjab in its whole length swarm with fine flocks of sheep and g... which they afford unlimited pasturage. But the owners of these flocks ar... and ignorant and will not of their own motion bring them down to the pl... fully utilize them where they are.

3. What is wanted is a system by which their sheep may be purchase... brought down for the use of the troops. Wealthy native contractors, I beli... be the most efficient means for accomplishing this end. The system had i... I allude to the old commissariat system, but for a difficulty of this sort (and p... it may be my belief for the strain of war) it was I am inclined to think th... efficient and as in the matter of the purchase of kine for food, all the arrang... would be made in a manner consonant with the feelings and prejudices ... classes concerned which is not always the case when the Commissariat Depa... in the present day is engaged in making purchases of cattle in native sta... elsewhere.

No. 397, dated 22nd April 1873.

From Secretary to Financial Commissioner, Panjab, to the Secretary to Government, P...

IN reply to No. 1356, dated 13th September last, submits a general st... containing the statistics regarding sheep in the Panjab, called for by the S... Government, with copy of a memorandum recorded thereon by the Offi... Financial Commissioner.

Memorandum by P. S. Melvill, Esq., Officiating Financial Commissioner of the Panjab, ... Supply of Sheep in the Panjab.

THE annexed statement contains information on the following points, viz :—

(1).—The number of sheep in each district.
(2).—Prices of sheep.
(3).—Consumption of mutton by natives.
(4).—Mortality by disease.
(5.)—Grazing grounds.
(6.)—Diminution of supply, and its causes.
(7.)—Statistics of export of wool.
(8.)—Remedies suggested for increasing the supply.

I.—The Number of Sheep.

2. There are 459,774 male (rams and wethers) and 1,781,243 ewes i... Panjab. The total number is 2,241,017.

3. The numbers in each division are as follows :—

Dehli, 67,177.—The largest number in any district is in Karnál; but th... not a large sheep-producing district.

Hissár, 102,337.—Sirsa and Hissár produce extensively.

Ambálah, 113,756.—Ambálah and Simla have large flocks.

Jálandhar, 180,379.—Of this number 133,000 appertain to Kangrá, which is one of the chief sources of supply in the Panjab.

Amritsar, 87,906.—Siálkot has the largest number; but this is not a sheep-breeding division.

Lahore, 174,173.—Lahore has 68,000, and Firozpúr 61,000.

Ráwalpindi, 465,045.—Ráwalpindi, Jhelam and Shahpúr all produce largely.

Multán, 618,775.—Jhang has the largest number; Multán and Montgomery are also good producing districts.

Deraját, 261,794.—Derah Ismail Khan and Derah Ghazi Khan have both large stocks.

Pesháwar, 169,675.—Pesháwar and Hazára are the chief producers.

4. The countries Cis-Indus having the largest and best stocks of sheep are—

(1).—The Himalayas and the hill country lying between them and the plains (Simla, Kángra, Hushiarpúr, Ráwalpindi and Hazára Districts).

(2).—That portion of Harriana which lies within the boundaries of the Hissár and Sirsa Districts.

(3).—The bár jungle between the Satlaj and the Jhelam (the Montgomery, Multán, Lahore, Gujránwála, Jhang, Shahpúr and Jhelam Districts).

(4).—The body of the Ráwulpindi District, which is more or less hilly, and the Salt Range.

(5).—The Cis-Indus *Thal* of the Shahpúr and Dera Ismail Khan Districts.

5. Trans-Indus, the Districts of Derah Ghazi Khan and Dera Ismail Khan have not only considerable stocks of sheep, but, in the case of Derah Ghazi Khan at least, large numbers are brought from the hills beyond the frontier, whence also droves of a very fine breed of cattle are constantly arriving. Bannú and Kohát have no sheep to speak of. Pesháwar is an important District, though in a less degree than many others. The Ambálah and Muzaffargarh Districts are also of value, but to a minor extent.

II.—Prices of Sheep.

The following is a statement of the average price per head of male sheep in each Division:—

		1863.			1868.			1872.			
Dehli	Rs.	1	8	8	1	13	0	2	1	0	Greatest increase in Gurgáon.
Hissár	,,	1	2	0	1	8	0	1	13	0	Very little increase in Sirsa.
Ambálah	,,	1	15	0	2	6	0	2	10	0	Greatest rise in Simla, where the price is Rs. 4.
Jálandhar	,,	1	15	0	2	5	8	2	12	0	Greatest rise in Jálandhar, where price is Rs. 3-8-0.
Amritsar	,,	1	13	0	2	3	0	2	12	0	Greatest rise in Siálkot.
Lahore	,,	1	8	0	2	3	0	2	7	0	Do. in Firozpúr.
Ráwalpindi	,,	1	11	0	1	15	0	2	5	0	Do. in Jhelam.
Multán	,,	1	4	0	1	6	0	1	10	0	Do. in Jhang, but the price in that District in 1863 was very low *viz.*, 12 annas.
Deraját	,,	1	9	0	2	1	0	2	6	0	Greatest rise in Bannú.
Pesháwar	,,	3	5	0	3	15	0	4	0	0	Do. in Kohát.

6. The percentage of rise in prices of sheep and of wheat are here g[illegible] each Division :—

Division.	Sheep.		Wheat.		Barley.		Jo[illegible]	
	Per cent. rise in 1868 over 1863.	Per cent rise in 1872 over 1868.	Per cent. rise in 1868 over 1863.	Per cent. rise in 1872 over 1868.	Per cent. rise in 1868 over 1863.	Per cent. rise in 1872 over 1868.	Per cent rise in 1868 over 1863.	[illegible]
Dehli ...	17·5	13·8	45·8	Increase. 18·8	48·0	Increase. 7·8	50·0	[illegible]
Hissár ...	33·3	20·8	46·3	10·5	41·2	15·7	24·5	[illegible]
Ambálah ...	22·6	10·5	52·0	0·0	123·1	Decrease. 14·1	62·2	[illegible]
Jálandhar ...	22·6	16·8	84·9	Decrease. 19·0	66·6	20·3	100·0	[illegible]
Amritsar ...	20·7	25·7	94·2	19·0	114·8	Increase. 4·0	90·0	[illegible]
Lahore ...	45·8	11·4	68·4	11·1	92·5	Decrease. 2·0	114·6	[illegible]
Ráwalpindi	14·8	19·4	91·3	Increase. 10·0	110·7	9·0	80·3	[illegible]
Multán ...	10·0	18·2	35·1	31·5	100·0	3·0	21·7	[illegible]
Deraját ..	32·0	15·1	45·2	30·8	52·8	33·0	26·7	[illegible]
Pesháwar ..	18·9	1·6	65·9	22·5	106·1	Increase. 8·0	132·5	[illegible]

It thus appears that the rise in the price of sheep has not been so great a[illegible] of the common food grains of the people.

III.—Consumption of Mutton by Natives.

7. The reports shew that there has been a decided increase under th[illegible] in the Rohtak, Lahore, Gujránwála, Ráwalpindi, Derah Ismail Khán and [illegible] Districts, and also in the Lahore and Amritsar Districts. The increase [illegible] Lahore and Amritsar Districts is chiefly attributable to the cities of those [illegible] An increase is also alleged in the Gurdáspúr District, but the accuracy of [illegible] somewhat questionable.

8. In the Districts of the Dehli and Jálandhar Divisions and in the Fir[illegible] District the natives consume ver[illegible] more mutton now than formerly. [illegible] the Sháhpúr and Muzaffargarh Dis[illegible] no such increased consumption is [illegible]vable. No information is given in regard to the Districts noted in the marg[illegible]

Ambálah Division	Jhang.
Siálkot.	Montgomery.
Jhelam.	Derah Ghazi Khan.
Gujrát.	Pesháwar Division.

9. My opinion is that without doubt the natives, being more prosperous [illegible] living in a far more liberal way generally than they did at the commencement of [illegible] rule, do eat more flesh of sheep and goats than formerly. With the excepti[illegible] the Muhammadan Frontier Districts goats are preferred by natives to sheep.

IV.—Mortality by Disease.

10. The following is an abstract of the reports for each Division :—

Dehli.—10 to 25 per cent. die yearly from small-pox and other disease[illegible]

Hissár.—About 6 per cent. died from epidemic disease in the previous year in the Hissár District. Epidemics sometimes visit the flocks of the Rohtak District. There is not much mortality by epidemics in Sirsa, but deaths occur from want of fodder in years of drought.

Ambálah.—16 per cent. in Ambálah ; 3 per cent. in Ludiánah ; 38 per cent. in Simla.

Jálandhar.—In Jálandhar 8 per cent. Murrain and ordinary disease carries off sheep, but not in great numbers, in Hushiárpúr ; and in Kángra there is "very little or no mortality by disease." This offers a curious contrast to Simla, where the conditions of ovine life must be similar.

Amritsar.—For the Amritsar District no figures are given, but murrain (notably small-pox) causes great losses every second or third years. Deaths from starvations frequently occur owing to failure of pasturage. From Siálkot the return is "no epidemic ;" and in Gurdáspúr the percentage of deaths from disease is 15.

Lahore.—In Lahore 5 per cent. In Firozpúr "many sheep die in rains of a disease called 'hungâ.'" In Gujránwála the ordinary mortality of the yearly produce is 33 per cent., reaching to 50 per cent. when small-pox breaks out.

Ráwalpindi.—Ráwalpindi, 15 per cent. ; Jhelam, 2½ per cent ; Gujrát, 2 per cent. ; and in Sháhpur "the mortality from disease and wild animals is considerable, being calculated at 25 per cent. ; but much is due to carelessness."

Multán.—Multán, 2 per cent. ; Jhang and Montgomery, 7 per cent. each ; and Muzaffargarh 10 per cent.

Deraját.—No statistics are given for this Division. Various epidemics are said to visit Dera Ismail Khan ; and in Bannú drought and consequent failure of pasture have caused considerable mortality.

Pesháwar.—11 per cent. in Pesháwar ; 16 per cent. in Kohát ; and 4½ per cent. in Hazára.

11. It is clear that no reliance can be placed on the figures given. The fact, however would seem to be that there is a very large mortality from epidemic diseases of various kinds, the treatment of which is believed not be understood or even attempted ; and that these epidemics commonly occur in the rainy season, when, owing to the absence of proper shelter, the animals rapidly die off. The case of Mr. G. Davies' attempt to establish a sheep farm, appended to this paper, is an instance of the extreme uncertainty of sheep rearing, and of the liability of sheep to epidemics.

V.—Grazing Grounds.

12. The diminution of these grounds is assigned as one reason for the falling off in the supply of sheep. This is true in regard to the more highly cultivated districts ; but the diminution can hardly be said to exist in the great pasturages of the Himalayas, the Bár and the Cis-Indus Thal The following is an abstract of the information given for each Division :—

Dehli.—The waste uncultivated lands in villages are alone used.

Hissár.— Do. In Sirsa the land-owners charge a fee of one anna per head of sheep per annum for grazing in village lands.

Ambálah.—As in the Dehli Division. But in Simla there must be plenty of grazing in the hills belonging to the various Chiefs.

Jálandhar.—In Jálandhar the village waste land only is used. In Hushiárpúr there is extensive grazing in the hills between the Beas and the plain. In Kangrá there are vast pasture lands on the higher slopes of the Himalayas and in the District generally. But sheep-keeping is confined to the Guddis, who take their flocks to Lahoul and Spiti in the summer, and return te Kangrá for the autumn and win ter months.

Amritsar.—As in Dehli.

Lahore.—In parts of Lahore and Gujránwála there is extensive grazing to be found in the Bar. There are also Government rakhs or preserves, in which grazing is obtainable on the payment of moderate fees. The return from Firozpúr is simply "not sufficient."

Ráwalpindi.—In Ráwalpindi and Jhelam there is plenty of pasturage,—1st, in the ordinary village wastes, as in Dehli; 2nd, in lands reserved for grazing at the settlement, in the case of villages adjoining Government Rakhs; 3rd, in Government rakhs, on payment of a small fee. In Gujrát the grazing is on village waste lands and in Government Rakhs; and in Shahpúr there is ample pasturage in villages and in the lands of the Bar and Thal.

Multán.—There is ample pasturage in the division in—1st, village lands; 2nd, the Government wastes and rakhs.

Derajút.—In Bannú the waste village lands seem to be the only grazing grounds. In Derah Ismail Khan, besides similar grounds, there is the extensive Cis-Indus Thal. In Derah Ghazi Khan there are large Government rakhs and extensive pasturage within village boundaries; and there is also fine pasturage in the frontier hills.

Pesháwar.—In Kohát the state of affairs appears to be pretty much what it is in Bannú. In Pesháwar it is said that sheep are grazed in different grazing grounds in each Illaka. In Hazára there is, I believe, plenty of grazing to be found within village boundaries all over the District. In addition, there are about 400 acres in different parts of the district.

VI.—Diminution of the Supply of Sheep, and its Causes.

13. The following is an abstract of the information given for each Division:—

Dehli.—In Dehli and Gurgáon there is a diminution of supply, owing to the cultivation of waste lands and the consequent scarcity of grazing, and to the great demand in our large Military Stations at Meerut and Dehli. In Karnál it is said that the stock of sheep is not lower than in previous years.

Hissár.—There is a decrease of sheep in Rohtak, owing to the breaking up of waste land; but this has never been a sheep-breeding district. In Hissár there is also a diminution within the last three or four years, owing to drought, and partly also to the extension of cultivation. In Sirsa it is said that there has been no diminution of supply, the demand being limited.

Ambálah.—The Deputy Commissioner of Ambálah states that there may be a diminution of supply, but that there is no evidence that such is the case. He does not think that the price of sheep has risen in the last five or ten years in greater proportion than the rise of prices generally. In Ludiánah and Simla a decrease of supply is stated, but the reasons for this opinion are not given, though the cause of the decrease is assigned as being the scarcity or bad quality of forage. The Deputy Commissioner of Simla also gives "the general use of cotton cloths and not woollen as formerly" as another cause.

Jálandhar.—In Jálandhar and Hoshiárpúr a diminution is assumed to exist. The Deputy Commissioner of Hoshiárpúr says that "the number is considerably reduced during the last ten years." The causes assigned are—(1) the increased consumption of mutton which "is caused (in the case of natives) to some extent by the decrease in the number of slaughter-houses for kine." The presumption here is, that if beef were more readily procurable by Muhammadans there would be a less consumption of mutton by people of that persuasion; (2) by the want of care in keeping the sheep. In Kangrá there has been no diminution of supply within the last ten years.

Amritsar.—The Deputy Commissioner of Amritsar believes that there has been no great diminution; that whatever diminution has occurred is due to the want of pasturage. The supply of sheep is imported. The Deputy Commissioner of Siálkot implies the existence of a decrease in supply owing to insufficient grazing ground. As to Gurdáspúr, it does not appear whether the supply has fallen off.

Lahore.—A diminution of supply is reported to exist throughout this Division owing to—(1) increased consumption; (2) epidemic disease; (3) increase of cultivation. The Deputy Commissioner of Lahore also gives the absence of a cattle fair in that District as one cause.

Ráwalpindi.—In the Ráwalpindi, Jhelam, and Gujrát Districts a diminution of supply is alleged. The reasons given are—(1) increased cultivation; (2) the increased consumption by natives in consequence of their improved condition; (3) the greatly increased demand for the supply of the many military stations; (4) mortality. The Deputy Commissioner of Ráwalpindi also assigns another reason, *viz.*, "the great restrictions imposed by the Forest Department upon grazing." In Shahpúr, no diminution is believed to have occurred.

Multán.—In the Multán and Jhang Districts, a diminution is reported; but in Montgomery the supply is said to be increasing and in Muzaffargarh there is no diminution in a part of the District. The Deputy Commissioner of Multán gives the following reason for a diminution in that District, *viz.*, that cultivation with canal irrigation is more lucrative and safer than sheep-farming, and that therefore in time a further falling off in the herds may be expected. The decrease in Jhang is ascribed to drought and disease; and the same causes are attributed to the decrease in a part of the Muzaffargarh District. The increase of sheep in Montgomery is attributed to "the increased price of wool and the large demand for the commodity. Sheep hides are also increasing in price, but the supply available for sale is decreasing, as owners find it more profitable to keep sheep for wool and hides and milk than to sell them to traders."

Derajât.—In Derah Ismail Khán the number of sheep has not diminished; "on the contrary, breeders are making strenuous efforts to keep the supply equal to the demand." The Thal of this District "now sends yearly large flocks to all parts of the Punjab at *treble* the price formerly realized." The price per head has risen from Rs. 1-7-2 in 1863 to Rs. 2-1-7 in 1872. In Derah Ghazi Khán also there is no "apparent diminution." Numbers of sheep "are brought in for sale from the hills beyond the frontier." A decrease of supply is assumed in Bannú owing to increased consumption by natives and the military, mortality, and the increase of cultivation.

Pesháwar.—The local officers do not say whether there has been any diminution of supply.

14. It will be observed that there are no statistics to shew whether the number of sheep is really less now than it was formerly. The consumption of mutton has increased enormously of late years, more especially amongst the European troops. Grazing lands have been much curtailed in parts, and where this has occurred it may fairly be concluded that the number of sheep has fallen off, because in highly cultivated parts of the country sheep are usually kept by menial castes and not by the land-owners. I am not aware that murrain are more frequent now than formerly. It is possible, and indeed it appears to be very probable, that the increased price of wool has deterred sheep-owners from selling their stock. The ordinary yearly yield of wool per sheep is said to be a little over two pounds, and the value of this at current rates would be about one rupee. It is manifestly more profitable for a man to keep a sheep, which gives him a return of one rupee per annum, than to sell it for Rs. 2 or Rs. 2-8-0. Although in parts of the Panjab the number of sheep may have decreased, I am not convinced that there has been any general decrease.

15. The difficulty experienced by the Commissariat in obtaining mutton for the troops may be owing to unwillingness to pay a sufficient price, or to some fault in the manner of dealing with the owners. If British Officers attempt to buy direct they are pretty sure to fail; for the underlings will extort a portion of the price paid to the sellers, who, moreover, are subjected to journeys and detention. If the assistance of the Civil District Authorities is invoked, the sheep will be obtained, but the result will be to ruin the market. Under such circumstances an arbitrary price is often fixed, and the full sum paid by Government does not reach the hands for which it was intended. The only plan which seems to me feasible is to employ contractors, who go to the pasturages and make their own terms with the sellers, whom they pay on the spot.

VII.—Export of Wool.

16. An abstract of the information given on this head for each division is furnished below :—

Delhi.—Dehli—Slight export to Najíbábad and Muzaffarnagar; mostly consumed in District. Gurgáon—Nearly all consumed at home. Karnál—5 maunds produced; one-half exported.

Hissár.—Hissár—750 maunds, average production of three years, exported to Rohtak and Karáchi; Rohtak—150 maunds, mostly exported to Dehli and Ambálah; no wool worked in District. Sirsá—Exported to Karáchi; quantity not ascertained.

Ambálah.—Ambálah—Consumed at home. Ludiánah—50 maunds, exported. Simla—648 maunds, exported.

Jálandhar.—Jálandhar.—Consumed at Home. Hoshiárpúr—Ditto, but manufactured blankets are exported. Kangrá—One-fourth of wool produced exported, but more is imported from Chamba.

Amritsar.—Amritsar—Very little of home growth is exported; comes from Chamba and Kángra, and is re-exported to Bombay for shipment. Siálkot—Consumed in District. Gurdáspúr—Ditto.

Lahore.—Lahore—887 maunds exported last year. Fírozpur—1,700 maunds yearly. Gujránwala—1,200 maunds to Karáchi.

Ráwalpindí.—Ráwalpindi.—2,000 maunds from tracts near Indus, exported last year. Jhelam—770 maunds yearly. Gujrát—400 maunds this year. Shahpúr—4,000 maunds to Karáchi.

Multán.—Multán—2,700 maunds yearly. Jhang—1,347 maunds. Montgomery—Unknown quantity exported to Bombay. Muzaffargarh—3,850 maunds exported to Multán and Sakkar.

Deraját.—Derah Ismail Khan—7,700 maunds in past year to Multán and Karáchi. Derah Ghazi Khan—952 maunds exported. Bannú—*Nil.*

Peshâwar.—Peshâwar—730 maunds annually. Kohát—*Nil.* Hazára—Very little exported.

17. It thus appears that the chief exporting districts are Hissár, Sirsa, Simla, Kángra, Firozpúr, Lahore, Gujránwála, Ráwalpindi, Jhelam, Shahpúr, Multán, Jhang, Montgomery, Muzaffargarh, Derah Ismail Khan, Derah Ghazi Khan, and Peshâwar; and that, with the exception of Simla, of which the produce probably goes to the North-West Provinces, the exports chiefly find their way to Karáchí for conveyance to Bombay and Europe.

18. Although it is a fact that the export of wool from India to the United Kingdom has much fallen off* during the years 1856 to 1870, yet it is not apparent that there has been any such falling-off in the export of wool from the Panjab. The only statistics at our disposal are those which have been registered at different parts of the Panjab during the last few years. The figures for 1868-69 to 1871-72 will be found appended hereto. The same wool has been entered more than once—an error which is unavoidable under the circumstances of the registration of the statistics. The return, however, may be safely taken as indicating a general increase in the wool trade.

* See table at pages 36 and 37 of Statistical Abstract for the several colonial and other possessions of the United Kingdom in each year from 1856 to 1870.

VIII.—Remedies suggested for Increasing the Supply of Sheep.

19. Although I do not consider that the stock of sheep has generally decreased, it is still advisable to take such measures as may be likely to keep up the supply with the ever-increasing demand. The various measures suggested by the local officers are now to be considered. The following proposals do not commend themselves to my judgment in so far as any action on the part of Government is concerned:—

(1.) To give advances to breeders.
(2.) To provide shelter in the rainy season.
(3.) To discourage the slaughter of lambs.
(4.) To forbid the purchase of ewes for slaughter.
(5.) To make each lambardar of a village keep up a small flock of sheep.
(6.) To induce European settlers to establish farms in the Himalayas, as, for instance, at Kangrá—a proposal regarding which it is sufficient to say that no European could compete with the herdsmen of the hills.

20. The proposed measures which deserve consideration are the following:—

(1.) *To establish Government sheep farms.*—The Commissioners of Delhi and Ráwalpindi and the Deputy Commissioners of Ráwalpindi and Bannú advocate this measure. There are about 3,000 acres at Delhi said to be suitable for a sheep run, but the greater part of this land is under the Military Authorities. It is also stated that there is land available at Balabgarh. Beyond this it does not appear that there is suitable land elsewhere. I would remark that in my opinion the Government should not attempt anything of the kind. The sheep farm at Hissár, being joined to the cattle farm and placed under very favorable conditions, is, I believe, successful; but I would not advocate the extension of the experiment. The supply of sheep had far better be left to the natives of the country.

(2.) *To increase the pasturage.*—This can be done by throwing open the Go- ernment rakhs or preserves free. I question the expediency of such a me. It is not desirable to enter on the bounty system, which this in fact wou be. The profits derivable from sheep-breeding are well understood by tho who follow this occupation in the tracts which carry large flocks, and i those tracts there is no want of pasturage. In the highly-cultivated distri of the Panjab it is not possible to provide grazing beyond what exists; an the tendency of the people is to reduce even the existing waste lands. M opinion is that nothing should be done under this head.

(3.) *To provide good rams.*—This is a measure which has already been acco plished to some extent, but it may with advantage be made of more gener application. The importation of English rams I regard as unadvisable, a they succumb to the climate. At the Hissár Farm the experiments ha shown that a cross* between the South Down an Leicester ram and the Bikanír ewe is the be animal; and I would, for the present, rely on th farm for the supply of rams to the Panjab.

* See letter of Superintendent, Hissár Farm, No. 145, dated 12th Augt. 1872.

(4.) *To encourage importation from Lahoul.*—This is indicated by the Com missioner of Jálandhar (Colonel Coxe) and by Mr. F. Halsey of Amritsa Lahoul is the summer grazing-ground of vast flocks, which are brought t the lower hills for grazing in winter. By dealing with the owners of th flocks at the places where they are to be found during the winter month very large supplies of sheep would be permanently procurable, but goo prices must be paid.

(5.) *To establish fairs and prizes for sheep.*—This is the proposal which i supported by the largest number of officers. I think that it would not b practicable to establish fairs exclusively for sheep, save in some exceptiona cases. Cattle fairs are held at th places and on the dates noted in th margin, and I would recommend th prizes be established at each of thes fairs for sheep. There are thre points to be encouraged, *viz.* numbe meat, and wool. Improvement o wool by crossing with the Meri ram appears to deteriorate the si and moreover the wool loses its fineness in the second generation—(see Su perintendent Hissár Farm's Nos. 145, dated 12th August 1872, and 16 dated 23rd Idem, appended). The prizes should be arranged so as t encourage the exhibition of numbers, and of sheep noted for meat-beari as well as for fineness of wool. No scale of prizes appears to me to be mor suitable than that lately propose for sheep at the Amritsar fairs, *viz.*:- One prize each of Rs. 100, Rs. 50 an Rs. 25 respectively for pens of ten wethers. Prizes on this scale or on som analogous scale, might be granted for sheep at each cattle fair. In Distric where there are no cattle fairs special sheep fairs might be established whe there seems to be a fair chance of success. I doubt whether the propositio made by two or three Deputy Commissioners to give prizes to *Zeminda* bringing the largest number to market would be advisable. As a rule, th land-owners do not keep sheep. The best plan would be to give the priz at fairs to the owners whoever they may be.

Gurgáon, March and September.
Hissár, March and October.
Rohtak, April and October.
Sirsa, latter part of August.
Jálandhar, June.
Amritsar, 11th April and in November.
Siálkot, during the Dasserah.
Gurdáspúr, ditto.
Firozpúr, January.
Gujránwála, 11th April.

* No. 151-1173, dated 18th February 1872, from Secretary to Financial Commissioner, to Secretary to Government.

21. There is one point that I feel bound to again allude to, *viz.*, the absolute necessity for leaving the market free. Civil Officers should be interdicted on pain of severe displeasure from using their authority in buying sheep. If a Tahsildár or other executive officer receives an order to buy sheep or anything else for his superior, the price paid is commonly too low, people are forced to part with their property, and the market is damaged. There is nothing so surely repressive of production as this.

22. With reference to the predilection of the largest section of the inhabitants of the Panjab for goats' flesh, it is a question whether prizes should not also be given at fairs for goats. Anything which may tend to increase the production of goats will tend to decrease the consumption of sheep.

23. To sum up. My opinion is—

(1.) That consumption of mutton by all classes, Native and European, is rapidly on the increase.

(2.) That there is no general diminution of the stock of sheep in the Panjab, though probably there is a decrease in the more highly cultivated districts, owing to the extention of cultivation.

(3.) That the only measures that Government should take are to give good rams to the people, and to encourage production of sheep by the award of suitable prizes at fairs.

XLIII.—RECLAMATION OF "KALLAR" OR "REH" LAND BY MEANS OF THE MADAR PLANT.

From C. M. Rivaz, Esquire, Officiating Under Secretary to Government, Panjáb, to W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjáb, No. 964, dated 9th July 1872.

Forwards copy of Government of India letter (Agricultural Department) No. 251, dated 27th June and its enclosure, regarding the reclamation of "Kallar" land, with a request that the Financial Commissioner will arrange for having the experiments desired by the Government of India, carried out in different parts of the Province, especially on some of the Kallar lands along the Western Jamna Canal.

From A. O. Hume, Esquire, C. B., Secretary to the Government of India, to L. H. Griffin, Esquire, Officiating Secretary to the Government of Panjáb, No. 251, dated 27th June 1872.

I am directed to forward the accompanying copy of a communication from the Public Works Department, No. 415,I., dated 31st ultimo, and its enclosure, regarding the reclamation of "Kallar" land in certain districts of Madras by the use of the shrub *Calotropis Gigantea*, and to observe that the Ak or Madár (the *Calotropis Hamiltoni*), which is known to be abundant in Upper India, is so closely allied to the Southern Indian plant referred to, that it may be expected to prove equally effective.

2. I am accordingly to request that experiments to test its usefulness in this way, if possible, be made in the Panjab, and the results reported to the Government of India.

No. 415,I., dated Simla the 31st May 1872. Memo. from the Deputy Secretary to the Government of India in the Public Works Department, Irrigation Branch, to A. O. Hume Esquire, C. B., Secretary to the Government of India, in the Department of Agriculture, Revenue and Commerce.

The undersigned is directed to forward for information, the enclosed report descriptive of the process pursued in South India in reclaiming for cultivation "Kallar" or "Reh" land.

No. 539, dated Chingleput, the 12th February 1872, from the Sub-Engineer, No. 3 Range, Chingleput, to the Superintending Engineer, 4th Division.

On the subject of Government Order in the Public Works Department, No. 367, of 7th instant (communicated with your memorandum No. 4524 of 9th idem), wherein some suggestions are circulated by the Government of India respecting the experiences obtained in "reclaiming Kallar land" for cultivation, the Government may be interested in knowing that in South India, in the districts bordering on the coast particularly, the "reclamation" of land of the nature under notice is very readily effected by recourse to vegetable manure merely by using the well known shrub *Calotropis Gigantea*.* The land is flooded, ploughed up, and thickly covered over with the leaves and stalks of the shrub, which are trampled in; after decomposition a second course of ploughing and flooding thoroughly reforms the land for the season.

* Tamil, *Yercum*; Telugu, *Jilladoo*.

permanent. Some powerful property of the shrub seems to kill (the native expression) the salts in the soil, and I have seen in my experiences over several districts very bad "Kallar" soils thus recovered. Paddy takes very fairly on the above soils after the very first doctoring. The milky juice of the *Calotropis* excites violent blistering, and its roots are used in country gun-powder manufacture; the bark yields fibre of a silken texture, and very strong.

No. 5392—93.

Financial Commissioner's Office, Lahore the 25th July 1872.

Copies of the foregoing forwarded to Commissioners, Dehli and Lahore, for information, with a request that they will be good enough to have the experiment tried, and report at the close of the next Rabí crop what the effect has been.

From Lieutenant Colonel J. E. Cracroft, Commissioner and Superintendent, Dehli Division, to J. A. E. Miller, Esqiure, Secretary to Financial Commissioner, Panjáb, No. 154, dated 16th July 1873.

With reference to No. 5392, dated 25th July 1872, has the honor to forward precis of correspondence regarding reclamation of Kallar land.

Epitome of the reports of the Deputy Commissioners of the Dehli Division, on the subject of the reclamation of Kallar land.

DEHLI.

Major Tighe reports that the experiments have been made by the Tahsildars in Dehli for the kharíf of this year, but the result will not be known until after next October.

GURGAON.

Mr. Oliver reports :—

1st. There is very little Kallar land in this district to make the experiment, if successful, worth application.

2nd. The results (system laid down in enclosure of Financial Commissioner's No. 5392, dated 25th July 1872,) did not prove satisfactory, and the experiments failed more on account of the people employed in making the same, not taking the interest they would have done had the Kallar land been more extensive, and by the reclamation of which benefit was to be derived.

Reports that "Ak" or "Madár" plant does not grow extensively in the district. The character of the soil of the district more sandy than "Shorí" Kallar. The watering of beds experimented on, was from wells, and never was sufficient to decompose the vegetable matter—hence chief cause of failure.

Experiments were carried on by Tahsildars and two or three of these places were visited by Deputy Commissioner.

KARNAL.

Captain Harcourt reports that experiments were tried in two instances, both of these pieces of land were bordering along side of Western Jamná Canal, and experiments conducted by Gholám Hosein Khan, Naib Tahsildár of Karnál. One portion of Kallar land situated at Rajpúr on the bank of Western Jamná Canal measuring five biswás was levelled so as to admit the water and allow the same to remain, when thoroughly saturated the soil was ploughed up and barley sown. Not a single seed germinated. Another piece of Kallar land was also flooded, ploughed up, and then thickly covered with leaves and stalks of the "Madár" shrub. A manure of Til and mustard "Bhoosá" was then trampled into this soil, and ploughing and flooding were again had recourse to, but the "barley" that was sown never showed above the surface. The extent of Jhíls, useless morass, and unprofitable soil is great in Karnál and chance of improving it should not be rejected, though in two instances the experiments failed. Promises to conduct further experiments under his own supervision with a view of reclaiming all the swampy grounds of the district which cause the prevalence of disease in the district.

COMMISSIONER'S REMARKS.

No sufficient test of the value of the experiments has been applied anywhere.

(Sd.) J. E. CRACROFT,
Commissioner.

From Lieutenant Colonel R. Young, R. E., Officiating Commissioner and Superintendent, Lahore Division, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, No. 292, dated 2nd July 1873.

In reply to his No. 5393, dated 25th July 1872, submits reports in original by Deputy Commissioners, Lahore and Firozpúr.

2. It is now an ascertained fact that Madár does kill Kallar and that the land owners of this province did not know it. There are not many localities in which the Madár grows in such quantities near Kallar land that the cure can be applied with good profit, but it is well to have spread the idea.

From Captain R. P. Nisbet, Deputy Commissioner, Lahore, to A. Brandreth, Esquire, Commissioner & Superintendent, Lahore Division, No. 399, dated 28th May 1873.

Referring to your Circular 104—2034, dated 3rd August 1872, I find that no experiments have been made as therein desired as to the efficacy of the "*Calotropis Hamiltoni*" in eradicating Kallar from the soil in land so affected in this district.

I have had up a good many of the Chowdrís and leading agriculturists and discussed the matter with them, and they allege first that in the neighbourhood of Kallar lands in this district there is no abundant growth of the *Calotropis Hamiltoni* to admit of a trial being made, but more than all they unanimously state that irrigation with canal water has done much to reclaim Kallar lands in this district, and that after three waterings the soil becomes culturable and that much Kallar land has been thus brought under cultivation. They also object to the handling of the "*Calotropis Hamiltoni*" which when briused they declare produces violent blistering of the skin to all who touch it with hands or feet.

From Captain R. P. Nisbet, Deputy Commissioner, Lahore, to A. Brandreth, Esquire, Commissioner and Superintendent, Lahore Division, No. 420, dated 10th June 1873.

In reply to his No. 365—1671, dated 7th instant, states that in the Lahore district, there is a considerable difference in the "Kallar" land according as the locality developes in a greater or less degree, the efflorescence of saltpetre, and in proportion as the soil is thus more or less impregnated, the flooding with canal water has to be repeated, and the affected area is slower in producing crops of any value. On the hard Kallar, after copious watering the "*Suœda Fusticasa*" vernacular "Laná" springs up, and where this is found in the 2nd or 3rd year rice may be cultivated. There are Kallar tracts which again it is hopeless to reclaim.

From Lieutenant Colonel P. Maxwell, Deputy Commissioner, Firozpúr, to A. Brandreth, Esquire, Commissioner and Superintendent, Lahore Division, No. 125, dated 20th May 1873.

Your No. 104—2034, dated 3rd August 1872, Reclamation of "Kallar" land by "*Calotropis Hamiltoni.*"

Experiments have been tried in 7 different villages in this district. In four of them the result was said to be favorable ; in three of them little success resulted.

2. I propose to endeavour to continue the experiments, and to urge the people to do so.

From Major F. J. Millar, Deputy Commissioner, Gujránwála, to Lieutenant Colonel R. Young, R. E., Officiating Commissioner and Superintendent, Lahore Division, No. 263, dated 30th June 1873.

In reply to his Circular No. 84—1568, of 27th May 1873, and Circular No. 104—2034, of 3rd August 1872, Reclamation of "Kallar" land by "*Calotropis Hamiltoni*" has the honor to state that experiments were made in five different villages with the following result :—

In one place three maunds of barley were produced from two kanáls of land, in the other place from one kanál of land the yield of poppy was more than the average produce from good land for poppy cultivation. In the three other places the result was not favorable.

No. 301—1969, dated 4th July 1873.

Commissioner's Office, Lahore Division.

Copy of the above forwarded to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, for information in continuation of No. 292—1924, dated 2nd instant.

From J. A. E. Miller, Esquire, Secretary to Financial Commisioner, Panjáb, to B. Ribbentrop, Esquire, Officiating Conservator of Forests, Panjab, No. 4773, dated 14th July 1873.

With reference to the enclosed correspondence received from Government, the Financial Commissioner will be glad of your opinion as to whether there is any truth in the theory that the "Madár" plant (*Calotropis Hamiltoni*) when worked into "Kallar" land in the manner described has the property of eradicating the "Kallar" or saline efflorescence.

From B. Ribbentrop, Esquire, Officiating Conservator of Forests, Panjáb, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, No. 43C., dated 20th July 1873.

With reference to your No. 4773, of 14th July, I have the honor to reply that I am not able to give the information asked for, "whether the Kallar is eradicated in Kallar land by the working in of *Calotropis Hamiltoni.*"

I have, however, observed at Changá Mangá that the decomposition of any vegetable matter has a beneficial influence on such lands. The salts are apparently dissolved by the carbonic and other acids which are formed in course of the decomposition, and seem to produce solutions harmless to vegetation. I will make experiments as required in Government letter No. 257, and furnish you with a full report on the subject in question.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, to Doctor T. E. B. Brown, Secretary to Agri Horticultural Society, Lahore, No. 5314, dated 7th August 1873.

I am directed to forward copies of correspondence received from Government, on the subject of the use of the Madár plant in counteracting the effects of Reh efflorescence in the soil, and to request the favor of your opinion as to whether there is any truth in the theory.

2. As far as enquiry has yet been made the evidence in favor of the theory is not conclusive, but the question is important for many parts of the Panjáb, and there is ample room for further enquiry and experiment.

From Doctor T. E. B. Brown, Secretary to Agri Horticultural Society, Lahore, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, dated 24th August 1873.

In answer to your office letter No. 5334, dated August 7th, and its enclosures, with reference to the use of the Madár plant in counteracting the effects of the Reh efflorescence, I have the honor to offer the following remarks :—

1st. Many soils containing Reh may be reclaimed by repeated floodings and application of manure, either of leaves or of other substances. This has been shown in the gardens of the Agri Horticultural Society at Lahore, which were formerly greatly injured by Reh, but are now little effected by it, and it is probable that this process may be more readily carried on in Southern India, where the rains are more profuse than in the Panjáb. It is, however, stated that the Madár plant contains a large proportion of the Nitrates of lime and potash, and these salts may be of service in neutralising the Reh as will be subsequently shewn.

But it is certain that the Reh cannot be killed, as the writer of the paper suggests, by the acrid effect of the milky juice of the Madár, although this is poisonous to many animals, since Reh has no resemblance to a living substance, but is a chemical product without life. Reh consists of a mixture of sulphate and carbonate of soda with chloride of sodium in various proportions, it is also often mixed with various substances derived from the soil.

A peculiarity of the sulphate and the carbonate of soda is that these salts melt in their water of crystallization at the temperature of 96,° and consequently Reh liquifies and sinks into the ground during the hot season in the Panjáb. Another peculiarity, which the above salts share with some other salts of soda, is that they effloresce or give off their water of crystallization when exposed to cold dry air so that during the cold weather the salts form a white powder, which covers the ground, and which readily absorbs moisture, and again gives it off to the air, and thus keeps the ground dry. While if the water is added in larger amount, the Reh dissolves and forms a strong solution, which prevents the absorbtion of liquid by the plants, and thus stops their growth, and at last their life. It is probable also that the carbonate of soda at least may be of direct injury to plants, as it dissolves many organic substances, but even this salt when it is sufficiently diluted is quite innoxious, as is shewn by the gardens of the station at Lahore, many of which are irrigated from wells, the water of which contains some carbonate of soda.

If therefore the amount of water added to a Reh soil is very large, it would form a solution which would not injure plants, unless by the amount of water present. This has happened in the gardens of the Agri Horticultural Society.

Further if good drainage can be conjoined with a large supply of water, this will materially assist in removing Reh from any spot, as the solution will be taken away from the ground by draining, as fast as it is formed, and unless there is a large supply of salt under the soil, the Reh will at last entirely disappear from that ground. This process probably assists the removal of the Reh in Southern India near the sea, where the rainfall is usually abundant and the drainage probably good.

In many parts of the Panjáb, however, the rains are scanty, drainage is defective, and water can seldom be obtained in sufficient quantity by artificial irrigation

to wash out the salts of Reh. Another way in which the effects of Reh may possibly be neutralised, is by altering the composition of its salts, so that the salts formed should have no tendency to effloresce.

The salt which I have recommended for this purpose is the nitrate of lime, which forms with sulphate of soda, nitrate of soda and sulphate of lime, and with carborate of soda, nitrate of soda and carborate of lime. Of these salts nitrate of soda actually attracts water from the air or is deliquescent, while both sulphate and carborate of lime are sparingly soluble in water, and are neither efflorescent nor deliquescent. I subsequently found that the "Chikná Kallar," which natives use in some places to remedy the ill effects of Reh, contains nitrate of lime. Hence if Madár leaves contain this salt, nitrate of lime, they may be useful in neutralising the Reh by effecting the decomposition above described.

But this same salt is always formed when organic matter containing nitrogen, such as common manure, is exposed to the action of the air, water, and lime or its carbonate, and as the latter exists in all soils, it is probable that by manuring and watering Reh land it would be rendered productive after a time, and as the leaves of the Madár and other plants contain nitrogenised matter this would still further assist in destroying the Reh, but in my opinion it is probable that leaves would be less effectual than manure, since they contain much less nitrogen. It should also be stated that when soils containing Reh are once brought into a condition to support vegetation, that every plant grown will take up a portion of the Reh salts and incorporate it with the structure of the plant, and if the plant is removed for food or other purposes the ground will be rendered less saline. This is most readily affected by growing plants for fodder, especially grasses on Reh land, as whenever the grass is cut a certain proportion of the salts are removed with the leaves.

I would therefore conclude that the treatment of Reh lands by the leaves of the Madár may succeed from the following circumstances :—

1st. From the repeated irrigations assisted by the natural rainfall and perhaps by drainage.

2nd. From the plant containing the nitrates of lime and potash in its leaves which neutralise Reh.

3rd. Partly from the Madár leaves forming nitrate of lime during their decomposition.

But its applicability to the Panjáb would depend on the comparative cost of collecting Madár leaves, and of buying manure in different districts, in which the necessary irrigation could be effected, and also on the comparative effect of these different plans of manuring on the Reh, and I am inclined to think that it would only be applicable where manure is dear while Madár leaves and water are very abundant.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, to T. H. Thornton, Esquire, Secretary to Government, Panjab, No. 1009, dated 10th September 1873.

I am directed to reply to your letter No. 964 of 9th July 1872, regarding the reclamation of "Reh" or "Kallar" land by means of the Madár plant.

2. The papers were sent to the Commissioners, Dehli and Lahore, with instructions to try experiments in lands affected by Reh efflorescence, and subsequently the opinions of the Conservator of Forests, and the Secretary to the Agri-Horticultural Society were taken.

Experiments were tried in the three districts of the Dehli Division.

In the Dehli district the experiment was made with the autumn crop, and the result is not known yet.

In Gurgáon the experiments failed. Kallar land is not common in this district, and the Madár plant is not abundant.

In Karnál the experiments failed also, but are to be repeated.

The Commissioner remarks that no sufficient test of the value of the experiments was made in these three districts.

3. The Commissioner Lahore, concludes from the result of experiments in his division that the efficacy of the Madár plant in counteracting Reh and Kallar is established. The information on which this conclusion is based is not, however, very complete.

In the Lahore district, no experiments were made. The Madár plant is said to be not abundant in the neighbourhood of Kallar lands.

The continuous use of canal water has been found to reclaim land from the effects of Kallar. The Deputy Commissioner remarks that the natives object to handle the Madár plant on account of its blistering qualities.

In Gujránwálah experiments were tried in five villages. In three of these the result was not favorable. In the other two the land treated with Madár produced in one case a tolerable crop of barley, and in the other a good crop of poppy.

In Firozpur experiments were made in seven villages, in four of which a good crop was obtained, and in three little success resulted. The experiments are to be continued.

4. The Officiating Conservator of Forests (Mr. Ribbentrop) has observed that the decomposition of any vegetable matter has a beneficial effect on Kallar lands. He has not, however, tried the Madár plant, and promises to do so and furnish a report.

Doctor Brown has also observed the good effects of flooding and the use of vegetable manure in counteracting Reh efflorescence ; the flooding must, however, be accompanied by good drainage so as to carry off the salts of the soil. The best agent in Doctor Brown's opinion for neutralising Reh is nitrate of lime. He has found that the "Chikná Kallar" which natives use to counteract Reh contains nitrate of lime, and he thinks that if Madár leaves are found to be efficacious in neutralising Reh, it must be because they contain nitrate of lime and because they probably form nitrate of lime during decomposition. But to say that the Madár "kills" the Reh is not strictly correct, as the Reh is an inorganic chemical product.

Doctor Brown's letter, dated 24th August 1873, which is forwarded herewith, is interesting and valuable, being founded not only on scientific knowledge, but also on practical experience.

5. The general result of the enquiry is that the Madár plant has no appreciable advantage over other forms of vegetable manure, and that whatever manure is used it must be supplemented by flooding and drainage in order to carry off the Reh.

The experiments that have been undertaken in districts have been directed too much to merely observing whether crops will grow on lands affected by Reh, when manured with Madár leaves, and not sufficiently to the effect of the Madár leaves in diminishing the visible presence of Reh. It cannot be expected that land largely impregnated with Reh will be cured in one season by the use of Madár leaves, or produce a plentiful crop at once.

The report on the Madras experiment shows that the treatment has to be repeated f[illegible]

6. The Madár plant does not always grow in or near Reh lands, and thi creates a difficulty in some places in carrying out the experiments. In the neig bourhood of Lahore, however, Reh lands are common, and the Madár is usual obtainable within easy distance. Experiments conducted at Lahore, in the garden of the Agri Horticultural Society and other lands under the supervision of th Secretary, Doctor Brown, would be the best means of continuing this enquiry an arriving at a sound conclusion.

From T. H. Thornton, Esquire, Secretary to Government, Panjáb, to J. A. E. Mille Esquire, Secretary to Financial Commissioner, Panjáb, No. 1461, dated th October 1873.

I am directed to acknowledge the receipt of your letter No. 1009—6151, date the 16th ultimo, reporting on the results of the experiments which have been mad during the past year in the Dehli and Lahore Divisions, for the reclamation o "Kallar" lands by means of the Madar plant.

2. No great degree of success appears to have as yet attended these experi ments, but a sufficient trial has not been made, as the process requires to be repeate for two or more seasons. The experiments should accordingly be continued in thos districts where they have been already instituted, and should also be made unde the supervision of the Conservator of Forests and the Secretary to the Agri Horti cultural Society.

3. Copies of the Financial Commissioner's report, and the interesting letter from Doctor Brown which has accompanied it, will be forwarded to the Government of India.

Report by W. J. Ward, Esquire, extracted from Selections from the Records of Govern ment, North Western Provinces, Vol. II No. II of 1869, page 211.

Improvement of "Reh soils." Remedies suggested.

In answer to the enquiry "what can be done to improve Reh soils?" variou remedies are proposed, such as flooding, sweeping, sub-so ploughing, cultivation of soda-consuming plants (if an such be known to the Botanist suitable to the condition of growth and climate), planting of trees which can live in such land, as "Kikar, chemical means, such as the use of nitrate of lime; but after all, the real practic remedy appears to be irrigation accompanied with efficient drainage. The reductio of the amount of the salts within harmless limits by their absolute separation fro the soil seems the only certain cure. Water, the cause of the efflorescence, is th only effective means for its removal; that it can and do dissolve out the saline constituents, is rendered eviden (if proof were needed) by the results obtained from th various soils treated with it; and from the water taken from Pit No. 3, every dro of water percolating through the soil, and passing away, will carry with it thos portions of the excess of salts existing in the soil with which it comes in contac This would be equally the case whether the percolation be from above downward from below upwards, or in a horizontal direction. Hence it is probable that th percolation of the canal waters has considerably purified the strata through whic it passes, and has produced a corresponding accumulation in other parts. There i no ground for apprehension lest a soil can be impoverished by water as none of th ingredients necessary for the growth of plants are removed in any appreciab quantity. To obtain the full advantage of the treatment of Reh soils with wate it is of course evident that the water must be applied in such quantity as to drai off, and that the means for its doing so must be provided.

Water the only effective means of removing "Reh."

Report by Dr. A. Fleming, dated 3rd April 1853, extracted from Select Papers of the Agri Horticultural Society, Panjáb, page 248.

I see in the last report of the Meeting of the Agri Horticultural Society an extract of a memo. by R. Egerton Esquire, C. S., on the saline efflorescence on the soil around Lahore, and on the application of "old mortar and crumbled brick" as an antidote employed by the natives to counteract its injurious effect on the crops. It would be interesting to ascertain in how far the virtue of the antidote is ascribable to the lime of the mortar or the burnt brick, and whether the rubbish usually selected as a top dressing to the young crops does not contain a large portion of nitrogenous matter. Not only at Lahore, but throughout the Panjáb, a very common top dressing to young crops, partly as a manure and partly as an antidote to the Reh or Kallar (saline efflorescence) on the soil, consists in the scrapings of roads and of sheep pens, &c. These have always appeared to me to owe their chief virtues to the nitrogenous principles they contain in abundance.

Since 1846, I have had occasion to examine analytically the saline efflorescence on the soil in various parts of the Panjáb, the Lahore district included, and have invariably found it to be a mixture of sulphate of soda (Glauber salts) and common salt in varying proportions. The efflorescence invariably gives an alkaline re-action indicative of carbonate of soda; but this salt, as far as I have observed, occurs in small quantity and is practically unimportant.

From the above it is evident that to render soil fertile, which contains a large amount of Kallar, some chemical antidote must be applied, which by double decomposition will convert the noxious salts into others having a less injurious and perhaps salutary effect on vegetation.

The effects of top dressing with road scrapings, sheep dung, and other nitrogenous manure seems to me to be to convert the salts of the original Kallar into nitrates, which in many plants have a far less injurious effect than sulphates and muriates. The calcarious matter too in road scrapings and mortar rubbish, when mixed with the Kallar, would give rise to the formation of sulphate of lime (gypsum) in some circumstances a most valuable manure.

I have not had leisure nor means to experiment largely on the subject under notice, but would suggest that the Society should institute a series of experiments on a patch of Kallar ground near Lahore, with the view of testing whether the abundant application of nitrogenous manure, such as dead animals, urine, ordure, &c., (the jail might supply abundance) will counteract the injurious effects of the ordinary saline efflorescence which is so destructive to the fertility of the soil over vast tracts of the Panjáb, particularly affecting those districts where water for irrigation is derivable from wells or rain.

Researches of the above nature are, I conceive, the chief object of a Society such as ours, and it is pleasing to observe the general departments of agriculture receiving now more prominent attention at the Meetings of the Society than at first start they appeared to do.

I may here mention that throughout the desert alluvial tracts of the Panjáb wherever the saline efflorescence is abundant, its presence is invariably marked by an abundant crop of Lána, (a species of Salsola,) which on being burnt, yields the Saji (an impure carbonate of soda) of your bazars. This is particularly abundant over the alluvial tracts skirting the salt range and Súlemán mountains, which, in dry seasons like the present one, are nearly desert, but which, were canal irrigation available, might be rendered extremely fertile.

I ought to have mentioned, that irrigating Kallar lands by river water is perhaps one of the simplest, cheapest and most effectual methods of removing the Kallar or counteracting its injurious effects. Where canal irrigation and lime are

Extract from Select Papers of the Agri Horticultural Society, Panjáb, page 82.

This saline efflorescence exists, in isolated portions of several districts, in such abundance as to be wholly inimical to vegetation. The land lies waste and covered with a film of crystalized particles as white as snow. Not only is the soil impregnated, but the spring water from wells, if used for irrigation only increases the evil.

A detailed analysis of this substance might be suggestive of a remedy, but in whatever proportions composed, there is no doubt, that it consists of alkaline salts, and that a corrective must be sought by the application of acids to combine with the alkalies and form new compounds, which would not be detrimental to vegetation, and might prove advantageous to it. In some parts of the country, where this substance is in great measure or wholly deficient, it is sought for from old mounds and applied as manure. It is, therefore, the excess only, in other places, which is so injurious. The acid liquor formed during the fermentation of vegetable substances might be tried as a cure. This could be readily and cheaply procured by the cultivator ; acetic acid being generated in the water in which hemp stalks are soaked, as well as in indigo vats. The result of the application of this acid to carbonate of soda (of which the natural efflorescence is believed to consist) would be to form acetate of soda to a certain extent, and to set carbonic acid free. The effect of acetate of soda on vegetation remains to be shown: but another combination of soda might be produced in the following manner :—

In the decomposition of animal matter, nitrogen gas is evolved to a considerable extent, which, uniting with the oxygen of the atmosphere, nitric acid is produced. This, in contact with carbonate of soda would form nitrate of soda, which is a well tried and very valuable manure. No cultivator can be at a loss for animal substance for such a purpose. Carcasses of cattle are exposed, and pollute the air near every village. If earth impregnated with the substance under consideration, and the efflorescent salt itself were collected and heaped on dead animals of any description, a manure would be formed which in time would cover large tracts of land, now barren, with the richest cultivation.

XLIV.—RIGHT OF TENANTS TO SINK WELLS.

From J. A. E. Miller Esquire, Secretary to Financial Commissioner, Panjab, to all Commissioners and Deputy Commissioners, Panjab, Circular No. 68—4755, dated 23rd September 1868.

The accompanying correspondence is circulated with a view to ascertaining the custom in the Panjab with regard to kacha wells sunk by tenants. The subject has attracted attention in the Legislative Council, and the reports of Local Governments have been called for as to whether any measures ought to be taken for altering the law, as interpreted by a recent decision of the High Court at Agra.

Kacha Wells.

2. The Officiating Financial Commissioner observes that, in the Panjab the localities where kacha wells can be made are very limited. Along the lower *Bêt* of the Sutlej, it is believed, they are common, and any cultivator may there dig such a well without special permission, but acquires no rights thereby.

3. In the Bar of the Rechna Doab, and South-East of Firozpur, kacha wells are made by graziers which last for some years, and are used for watering cattle only. There are moreover certain rivers, like the Deg, in the Rechna Doab, on which *Jhullars* are constructed, some temporary, and some permanent.

4. Enquiry should be made as to whether there are any restrictions imposed on tenants in all such cases. The village custom should be ascertained, and the provisions of the administration papers should be verified, and compared with the actual customs found to exist.

5. Reports of district officers should be submitted through Commissioners, with their opinion.

From E. C. Bayley, Esquire, Secretary to Government of India, to the Secretary to the Government, Panjab, No. 295 dated 11th August 1868.

I am directed to forward for the information of the Lieutenant Governor, a copy of a letter that has been addressed to the Government of the North Western Provinces, in regard to the liability of tenants to be ejected from their holdings, if they make certain improvements without the previous consent of their land-lords.

2. I am to request that the Governor General in Council may be favored with information in regard to the law or custom with prevails in the Panjab upon this subject, and that His Honor the Lieutenant Governor will be good enough to say, whether he is of opinion that any measures ought to be taken for placing the law on a different footing.

Copy of a letter No. 293, dated 11th August 1868, from E. C. Bayley, Esqr., Secretary to the Government of India, to the Secretary to the Government of the North Western Provinces.

I am desired to request that the attention of the Lieutenant Governor may be drawn to the debate of the 22nd ultimo,* in the Legislative Council on the Bill which has now become law, as Act XIX of 1868. (The Oudh Rent Act).

* Published in the Supplement to the *Gazette of India* of the 1st August 1868.

2. It will be observed that, in speaking of that portion of the Act (Sections 22 to 26), which provides for the payment, under certain circumstances, of compensation to tenants for unexhausted improvements, Mr. Strachey referred to a lately published decision† of the High Court at Agra, by which it has been declared to be the general law of the North-Western Provinces that a tenant, even though he possess a right of occupancy, is liable to ejectment from his holding, if he should dig a kacha well without the previous consent of his landlord. It was admitted by the High Court that "there may be local usages forming exceptions to the general law," but considering as Mr. Strachey said, and as the Board of Revenue observed in their circular of the 3rd June 1868‡ that in a great part of Northern India, the digging of kacha wells is as essential to the production of a crop as the ploughing of the land itself, the Governor General in Council cannot view without anxiety the results to which this decision may possibly lead.

† *Vide Government Gazette, N. W. Provinces,* 3rd June 1868.

‡ Published *in Government Gazette North Western Provinces, 3rd June* 1868.

3. His Excellency in Council does not doubt that this subject has already attracted the Lieutenant Governor's attention; but he has thought it desirable to notice the fact, that the subject has been referred to in the debates of the Legislature, and to ask whether, in the opinion of His Honor, any further measures ought to be taken by the Government for the alteration of the law which has been laid down by the High Court of the North-Western Provinces.

From Secretary Sadr Board of Revenue North-Western Provinces, to all Revenue Officers in the North Western Provinces, Circular No. 8 dated 3rd June 1868.

I am desired by the Board of Revenue to call your attention to a recently published decision of the High Court, No. 158 of 1866:—

Koonj Beharee Patuck (*Defendant*), *Petitioner*, *VERSUS* Shiva Baluck Sing (*Plaintiff*), *Opposite party.*	Heading VII. — Landlord and Tenant. — *Revenue Department.* — *Present.* C. B. Thornhill, Esq., C. S. I. and J. F. D. Inglis, Esqr.

By this decision the general rule is laid down, that a ryot may be evicted for digging a kacha well without the consent of his landlord, but at the same time it is admitted that, "there may be local usages forming exceptions to the general law."

2. The Board are apprehensive that, unless due consideration is given to this important exception, the indiscriminate application of the "general law" may in many districts, place the cultivator at the mercy of the zemindar, as, in some parts of these Provinces, the annual sinking of a kacha well is believed to be as essential to the production of a crop as the cultivation of the ground by the plough.

3. In all cases, therefore, in which the zemindar sues for the ejectment of a cultivator for breach of a condition of contract by sinking a kacha well, the Revenue Officers must be most careful to investigate the question of local custom and record evidence and a finding on this important point.

ABSTRACT.

BOARD call attention to a recently published decision of the High Court, ruling that a ryot may be evicted for digging a kacha well without the consent of his landlord, and communicate instructions.

The 20th July 1867.

PRESENT.

The Hon'ble Sir W. Morgan, Knight, *Chief Justice.*

"	"	W. Roberts,	*Justices.*
"	"	F. B. Pearson,	
"	"	C. A. Turner,	
"	"	R. Spankie,	

Case No. 158 of 1866.

Review of judgment of the decision of the late Sadr Court in special appeal, dated 9th June 1866, reversing the decision of H. B. Henderson, Esquire, Judge of Benares, dated the 21st November 1865.

Koonj Beharee Patuck *(Defendant) Petitioner.*

VERSUS

Shiva Baluck Singh, *(Plaintiff) Opposite party.*

Pleaders for Petitioners.—Lalla Man Rai, Munshi Hanoomán Pershad : Babú Piari Mohun Banúrji, and Lalla Lalita Pershad.

Pleaders for opposite party.—Moulvie Haider Hossien, Moulvie Mehndee Hassun, Moulvie Furid-ud-din Ahmed, Mir Ali Ahmed, and Shah Assud Ali.

Ryot :—Ejectment of—Breach of contract, Condition (express or otherwise), Sections 6 and 23, Clause 5 Act X of 1859.

The act of digging a well or planting trees may not necessarily imply or assert a proprietary right in the land in which the well is dug or the trees are planted, yet by the general law of these provinces, a ryot even having a right of occupancy being prohibited from doing certain acts, such as planting of trees or digging a well, without his landlord's consent, makes himself liable to ejectment, unless protected by local usage, from his holding ; if he were to dig a well or plant trees without the landlord's consent, Section 6, Act X of 1859, which provides that a ryot who has held or cultivated the land for more than twelve years, acquires a right of occupancy in it so long as he pays rent for the same, must be read consistently with Clause 5, Section 23, of that enactment, which provides that a ryot is liable to ejectment from his holding for breach of contract, and not as importing that a ryot having right of occupancy, so long as he pays the rent claimable from him, is at liberty to use and deal with the land as he pleases.

The useful or beneficial nature of an act is not a justification of it, if it be a breach of contract.

A condition not expressly made between the parties to a contract, may nevertheless be attached to such contract by custom.

The general rule, that a ryot is liable to ejectment, if he digs a well without the consent of the zemindar, may be varied by particular local usage or express contract.

This case was referred to a full Bench by F. B. Pearson and R. Spankie, Judges, who admitted the review with the following order :—

Referring order.—The plantiff's suit was brought under clause 5, Section 23, Act X of 1859, for the ejectment of the defendant from a holding of three bigahs and six biswahs of land, for breach of condition of contract, by digging a kacha well in the holding aforesaid. The case was disposed of by all the Courts, together with another and similar case instituted by the Rajah of Benares against Mussumat Munia, and the grounds of the decision in the two cases are the same. The claim was decreed by the Court of first instance, whose decision was upheld by us in special appeal, in opposition to that of the Lower Appellate Court.

We have acceded to an application for a review of our judgment in the case, with a view to the reconsideration of the question, whether the alleged breach of contract is one which renders a tenant liable to ejectment under the terms of Clause 5, Section 23, Act X of 1859 ; but not because we think the precedent referred to by the applicant of the 16th July last, which follows an earlier decision of the 16th March last, and refers to mortgages by tenants of their rights in their holdings to be strictly applicable to the present case. It is true that such mortgages resemble the act of digging a well, in not being allowable according to custom without the permission of the landlord ; but the transfer of a non-proprietary right is not an assertion or exercise of proprietary right exactly in the same sense in which the construction of a well may be regarded as such. On the other hand, the latter act may be viewed (while the former could not be) as calculated to increase the productive powers of the land, and therefore subservient to the ends contemplated by the lease of land for cultivation. Nevertheless, the construction of a well withdraws a portion of land from cultivation, and the digging of kacha wells may, in some respects or under some circumstances, be attended with injury to the adjoining land. It might be supposed that the increase of the productive power of the land in consequence of irrigation from wells, would ultimately confer an advantage upon the landlord in the shape of an enhanced rent, and the terms of the second Clause of Section 17 of the Act, do not appear to be necessarily inconsistent with that supposition ; but it is urged more plausibly that such an advantage would not accrue in cases governed by Sections 3 and 4 of the Act ; and it is strenuously contended that if tenants may dig wells with impunity without the landlord's consent, the distinction between landlord and tenant is in danger of being obliterated.

Section 128 of the "Directions for Settlement Officers" declared cultivators incompetent to perform any act, which is considered to indicate proprietary right, such as digging a well, planting a garden, or locating a labourer. But the Circular order dated 26th September 1856, of the Sadr Board of Revenue, North-Western Provinces, recognized the expediency of permitting cultivators to sink wells, on the understanding that the tenure of the well shall be in every respect the same as the tenure of the holding in which it is constructed.

The late Sadr Court have we believe, held repeatedly that the plantation of trees in land leased for the purposes of cultivation is an act so manifestly at variance with the object and purpose of the lease as to constitute a breach of contract within the terms of Clause 5, Section 23. But the digging of a well, as we have already remarked, inasmuch as it conduces to the efficient cultivation of the land, differs from the act of planting trees.

The question whether tenants are competent to dig wells without their landlord's consent, is distinct from the question whether by so doing they are liable to ejectment under Clause 5, Section 23. The latter question would not arise in cases in which the lease contained an express condition, attaching the penalty of ejectment to such an act. It arises in cases in which there is no lease, or at least no written lease, or no such stipulation in the lease ; and when there is no other contract between the parties than what is implied by their relative positions.

We refer the subject, as being one of nicety and importance, for the consideration of the next Full Bench, and direct the papers to be circulated in the meanwhile among the Judges. The case is re-admitted on the file.

OPINION OF THE FULL BENCH.

This is a case in which the ejectment of a tenant from a holding of three bigahs and six biswahs of land, for breach of condition of contract by digging a kacha well therein was decreed by a Divisional Bench of the late Sadr Court, in special appeal on 9th June, 1866, in opposition to the decision of the Lower Appellate Court, and in concurrence with that of first instance; and in which an application for a review of judgment by the defendant (respondent), was granted on the 3rd September last, in order that it might be determined by a Full Bench of the High Court whether, having regard to the circumstances that the act of digging a well for the purpose of irrigation, as tending to increase the productive powers of the land, is subservient to the end contemplated by the lease of the land for cultivation, such act can justly be viewed as a breach of the contract between landlord and tenant, and renders the latter liable to ejectment from the holding, in cases in which no such condition has been expressly made between the parties. It is to be observed, first, that the useful or beneficial nature of an act is not a justification of it if it be a breach of contract; and secondly, that a condition not expressly made between the parties to a contract may nevertheless be attached to such contract by custom.

Section 6, Act X of 1859, which declares that any ryot who has cultivated or held land for a period of twelve years, has a right of occupancy in the land so cultivated or held by him so long as he pays the rent payable on account of the same, must be read consistently with Clause 5, Section 23 of the same enactment, which provides for the cognizance of suits to eject a ryot on account of a breach of the condition of any contract by which a ryot may be liable to ejectment, and not as importing that a ryot having a right of occupancy, so long as he pays the rent claimable from him, is at liberty to use and deal with the land as he pleases. Ordinarily the lease of land by a landlord does not involve a surrender on his part of all rights in the land, except the right to rent, and we are satisfied that in these provinces the power of a ryot even having a right of occupancy in his holding, is limited by other conditions than the single condition of paying the proper rent, and that there are certain acts, such as the construction of a well, and the planting of trees, which he is not competent to perform without his landlord's consent. There may, of course, be local usages forming exceptions to the general law; but we see no reason to doubt that the law is such as it is represented to us to be by the pleaders who appear for the plaintiff in this case. The law may or may not be opposed to good policy. The act of a digging a well or planting a tree does not necessarily imply or assert a proprietary right in the land in which the well is dug or the tree planted. Whether it be most expedient that the tenant should be encouraged to improve his holding by all means, or that the benefits resulting from certain modes of improvement should be secured to the landlord, or left to his option, may be a question; but it is one which we are not called upon to consider. The Court must recognize the law as it is found to exist, so long as it shall not be superseded by positive law, and must apply it in all cases not governed by local usages or special contract.

So also in respect of the penalty incurred by a tenant who is guilty of a breach of contract of the kind which this case brings to our notice; the unwritten law of the country must be our guide. Were we free to legislate upon the subject, it might seem to us equitable and expedient to look to the amount of injury actually caused to the landlord by the act complained of, and to grant him relief and com-

pensation, whenever possible, otherwise than by ejectment of the tenant. But it is not contended or proved that any other penalty than forfeiture of his holding for such a breach of contract is sanctioned by the law of these provinces.

The decision of the 9th June, 1866, in this case now under review, as far as it proceeds on the principles above stated, is not at variance with any former decisions passed by the late Sudder Court; and it is also, we believe, in accord with the views which have been usually held and enunciated by other authorities. The decision is accordingly affirmed by us, with costs.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjáb, to T. H. Thornton, Esquire, Secretary to Government Panjáb, No. 297, dated 13th April 1869.

With reference to your No. 630, dated 17th August 1868, regarding kacha wells, I am directed to state that the reports of officers were called for in Circular No. 68, dated 23rd September 1868, of which copy is enclosed, and the result is shown in the enclosed abstracts of replies.

The Officiating Financial Commissioner's views are as follows:

2. Practically the question applies only to tenants with a right of occupancy. Tenants-at-will can be readily ejected, and therefore it is not to be expected that they would attempt to sink kachá wells in opposition to their landlords.

3. The Officiating Financial Commissioner believes that in no part of the Panjáb is the sinking of a kacha well a necessary step towards the raising of a crop as is said to be the case in some parts of the North-Western Provinces.

4. With the exception of the Hissár and Jhelam districts, and the Parganah of Bálabgarh (Dehli) and one village in Sirsa, the village administration papers are silent on the point under discussion.

5. The enquiry lately made shows that the custom of the Panjáb is, that tenants with a right of occupancy may sink kacha wells without the leave of the proprietors, except in parganah Bálabgarh and the districts of Ráwalpindi, Jhelam, Sháhpúr, Derah Ismail Khán and Derah Ghází Khán; in the districts of Rohtak, Simla and Kángra, where kacha wells are not known, and in Muzaffargarh, where the question is doubtful. It is also stated that in the Chúnián and Kasúr parganahs of the Lahore district a tenant cannot sink a kacha well without the permission of the landlord. No replies have been received from the Peshawar Division.

6. But this customary law is of no force except in those districts where it is incorporated in the village administration papers, for Section 19 of the Panjáb Tenancy Act provides that "no tenant having a right of occupancy in any land shall be ejected therefrom otherwise than in execution of a decree," which decree shall not be made unless there is an unsatisfied decree against the tenant for arrears of rent, or unless the landlord buys him out; and the latter provision does not extend to the superior classes of tenants mentioned in Section 5 of the Act.

It would therefore seem to follow that under the existing law in the Panjáb, *i. e.*, the Panjáb Tenancy Act, a tenant may sink kacha wells, plant jhallars, and the like, in those districts where there is no provision in the settlement record to the contrary, in defiance of the proprietor, and in all cases where there is no agreement binding the tenants not to sink such wells.

7. It so happens, however, that where the customary law does not admit of the sinking of kacha wells by tenants the operation of the Tenancy Act will not be

hurtful to any appreciable degree in this particular. For, in the districts of Ráwal pindi and Sháhpúr kacha wells for irrigation are not known, though certainly in Sháhpúr they are used in watering cattle, and some slight trouble might arise about them; in Rohtak, Simla and Kángra they are unknown, and are likely to remain so; in Derah Ismail Khán, Derah Ghází Khán, Muzaffargarh and in the districts of Peshámar Division, the settlement has yet to be made, and provision can be recorded in the administration papers of these districts in conformity with the custom of the people; and as regards the Chúnián and Kasúr parganahs of the Lahore district, the probability is, that the alleged custom is not well defined, and it is not believed that any evil would result from adopting in them the same principles as may be applied to the remaining portion of that district.

8. It therefore appears to Mr. Melvill, that no legislation is required regarding the right of tenants to sink kacha wells for irrigation in the Panjáb.

Kacha Wells.

The Government of India, (No. 295, dated 11th August 1868), request information as to the custom in the Panjáb in regard to kacha wells made by tenants, with reference to a ruling of the High Court of Agra, that tenants are liable to ejectment for so doing.

The custom is briefly noted.

Dehli and Larsauli Parganahs.—Tenants may sink wells without landlord's permission, but acquire no rights.

Balabgarh.—They are not allowed to do so.

Karnál.—Tenants are allowed, without interference from landlords.

Gurgáon.—No restriction. Seldom sunk as they are useless.

Hissár District and Sirsa Tahsil.—Sanction of landlord is necessary. Not liable to ejectment for digging without sanction. *Fazilká*—hereditary cultivators may dig wells but acquire no rights thereby.

Rohtak.—The practice is almost unknown.

Ambálah.—Tenants are not restricted in digging kacha wells; but must not make pacca wells—2,088 kacha wells in the district.

Ludiánah.—Tenants do dig kacha wells but acquire no rights.

Simla.—Kacha wells not sunk in the district.

Jálandhar.—The practice is for tenants to dig kacha wells. Landlord is consulted in most cases.

Hoshiárpúr.—No restriction against kacha wells.

Kángra.—Lands not irrigated from wells.

Amritsar.—Commissioner says sinking of kacha wells is no infraction of proprietary rights. Deputy Commissioner: Such wells are sunk, but cultivators acquire no rights.

Siálkot.—There are no restrictions, but cultivators acquire no rights by forming kacha wells.

Gurdáspúr.—Kacha wells are sunk and landlords make no objection.

Multán.—Commissioner says as a rule there is no restriction, and tenants are not liable to ejectment. Deputy Commissioner: Where they are sunk in his district by the tenants the landlords pay the cost. Jhullars are generally put up by landlords. For these in some parts of the district, the tenant excavates the cut, and the landlord supplies the woodwork. In tahsil *Shújabád* tenants form Jhullars.

Muzaffargarh.—Tenants would not be ejected for making a kacha well without permission, but sanction of the landlord is usually obtained.

Montgomery.—There is no restriction; tenants acquire no rights by sinking kacha wells.

Lahore.—In parganahs Lahore and Sharakpúr hereditary cultivators can sink wells without permission of landlord. In Chúniáu such permission is necessary. In Kasúr permission to sink a new kacha well is necessary. Non-hereditary cultivators cannot sink kacha wells without permission. No rights are acquired by forming such wells.

Firozpúr.—There are no restrictions.

Gujránwála.—Landlords do not object but encourage the sinking of kacha wells, no rights are acquired.

Ráwalpindi.—Commissioner remarks that kacha wells do not exist; they are of stone laid in mortar; no tenant can sink such a well without landlord's permission.

Jhelam.—Tenants cannot sink kacha wells without landlord's permission.

Sháhpúr.—Kacha wells are used for watering cattle, and cannot be dug without landlord's permission. Commissioner remarks that tenants would be liable to ejectment for sinking kacha wells without leave.

Derah Ismail Khán.—There is no fixed rule; but permission is necessary.

Derah Ghází Khán.—Tenants ask permission, which is never refused.

Bannú.—There are no kacha wells.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner Panjáb, to T. H. Thornton, Esquire, Secretary to Government Panjáb, No. 1163, dated 3rd November 1873.

In the year 1868, an enquiry was instituted in accordance with the orders of Government of India, received with your No. 630, dated 17th August, regarding the right of tenants to sink kacha wells, and the views of the Officiating Financial Commissioner, Mr. Melvill, were communicated in this office No. 297, dated 13th April 1869, to the effect that there was nothing to prevent tenants sinking wells of this description, planting jhalars, and the like, in those districts where there is no provision in the settlement records to the contrary, and in all cases where there is no agreement binding tenants not to sink wells, &c. The Officiating Financial Commissioner at the same time expressed his opinion that even in respect of districts where the customary law of the Panjáb did not admit of this concession to tenants, no legislative action was necessary, as kacha wells were unknown in some of them, and in the remainder a settlement had yet to be made and provision could be recorded in the administration papers of those districts.

2. The above mentioned reference originated in consequence of a decision of the High Court of Agra, No. 158 of 1866, by which it was declared to be the general law of the North-Western Provinces that a tenant even though he possess a right of occupancy, is liable to ejectment from his holding, if he should dig a kacha well without the previous consent of his landlord.

3. The view affirmed by the judges of the Agra High Court in the above decision was however modified in a subsequent decision (special appeals Nos. 1225 and 1235, of 1870) of which a copy, attached to the Board's Circular No. 7 of 1872, was forwarded by the Board to the Financial Commissioner. This Circular, together with the correspondence marginally noted, is herewith forwarded for the orders of Government with the following remarks by the Financial Commissioner.

Officiating Secretary to Board of Revenue North-Western Provinces, to Officiating Secretary to Financial Commissioner, No. 1259, dated 17th October 1872, with enclosures.

Commissioner Dehli, No. 126, dated 5th May 1873.

Secretary to Financial Commissioner, No. 3406, dated 13th May 1873.

Commissioner Dehli, No. 370, dated 19th September 1873, all with enclosures.

4. Mention having been made in the Agra High Court's revised order of certain correspondence with the Commissioner of the Dehli Division, in which that officer reported that the proprietors in the Dehli Division objected to the right of cultivators to construct wells, the Financial Commissioner applied to the Board for a copy of the correspondence. The Board thereupon forwarded copy of their Circular No. 00 dated 26th September 1856, annexed to which is a letter No. 1189, dated 29th August 1856, wherein the principle now adopted in the revised order of the Agra High Court was enjoined for observance by all Commissioners in the North-Western Provinces, of which the Dehli Division then formed a part. As a means for promulgating this principle it was directed that in all cases of new settlement or re-settlement a stipulation should be entered in the administration paper that the cultivators shall have the liberty of sinking wells, but that the tenure of the well shall be in every respect the same as the tenure of the holding in which it is constructed.

5. Copy of this correspondence was forwarded to the Commissioner of the Dehli Division for information. The correspondence which ensued with the Commissioner of the Dehli Division shows that the objection of the proprietors to the construction of wells by tenants is almost universal. At the same time the Settlement Officer is of opinion that the introduction of a clause in the administration papers of the re-settlement, to the effect that the building a well shall give the tenant no proprietary claim, though superfluous as a mere statement of the law, would be most advantageous, as it would give the owners confidence and lead very largely to the extension of well irrigation.

6. The Financial Commissioner observes that the question is whether a proprietor has any right to oust a cultivator who builds a masonry well. This question cannot be decided by the settlement on theoretical grounds. The existing custom, if there is one, must be recorded; or if the parties agree, the agreement may be recorded. Mr. Egerton is averse to the insertion of any condition in the settlement records which will bind tenants with right of occupancy not to build masonry wells on the land they occupy unless it is clearly shown that such a condition in regard to the present cultivators or their predecessors in interest existed in the record of the first settlement. The records of the Dehli Division were almost universally destroyed during the mutiny: there is therefore some difficulty in ascertaining what the former settlement record contained. But it may be possible to ascertain what entries were made in the former papers by examining private copies which have been preserved or by taking the evidence of Kanungos or other officials who know what was entered.

7. The orders of His Honor the Lieutenant Governor are solicited regarding the extent to which the orders contained in the Circular of the Sadr Board of Revenue No. 00 dated 26th September 1856 are to be observed.

From T. H. Thornton, Esquire, Secretary to Government Panjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner Panjab, No. 1705 dated 20th November 1873.

I am directed to acknowledge receipt of your letter No. 1163 dated 3rd November, with enclosures, regarding the right of tenants to sink wells in the Dehli Division.

2 In reply, I am desired to state that His Honor the Lieutenant Governor concurs in the Financial Commissioner's opinion expressed in para 6 of your letter, that it is undesirable to enter in the settlement records any provision which is not either a well ascertained custom, or a matter of special agreement between parties interested.

3 In the case of the present reference if, as is probable, it is an established custom that the sinking of a masonry well by a tenant does not change the status of the cultivator, the fact can be recorded; if it is agreed that tenants shall be permitted to sink masonry wells on the understanding that their status is not altered, the agreement can be embodied in the settlement record; but no authoritative declaration of the nature of that contained in the North Western Provinces Board of Revenue Circular 0 0 dated 26th September 1856, should, in His Honor's opinion, be entered except under the circumstances above described.

Selection from the Records of the Financial Commissioner's Office, No. 17.

No. XLV.—MEMORANDUM ON THE VALUE OF THE EUCALYPTUS GLOBULUS.

Furnished by Ulick Ralph Burke, Esq., M. A., Barrister-at-law.

In the month of December 1873, I was asked by Dr. Scriven to write a paper on the prophylactic properties of the Eucalyptus, but feeling that the importance of the subject called for something more than a record of my own experience and impressions, I at once put myself into communication with two or three eminent horticulturists and botanists in London. I have received letters from Mr. Bateman, F. R. S., Vice President of the Royal Horticultural Society; who saw Mr. Bentham, President of the Linnean Society upon the subject; and from Mr. Sowerby, of the Royal Botanical Society, and from Dr. Hooker from the Royal Gardens Kew. I have also received various publications, of which I have freely availed myself in the preparation of this memorandum.

The Eucalyptus was first observed in the year 1792 in Van Dieman's Land by Labellardiére, and both in that country and in Australia numerous varieties are found in great abundance. These not only form one of the most characteristic features of the vegetation of that continent, but the tree is indigenous only in Australia and some of the islands of the Malay Archipelago. The Eucalyptus is a genus of the natural order *Myrtaceæ*, sub-order *Liptospermeæ*, and the species which are best known to the scientific world are *Eucalyptus Resinefera* the Red Gum or Iron Bark tree:—*Eucalyptus Robusta:—Eucalyptus Mamnifera:—Eucalyptus Dumosa*; *Eucalyptus Gumni, and Eucalyptus Globulus.* All these species possess various and most interesting properties, but the last calls for our especial attention inasmuch as this is the species which has so far principally engaged the attention of scientific men.

M. Ramel has the credit of having first imported Eucalyptus into Europe. Since 1856, he has been endeavouring to acclimatise and develope the Tasmanian Blue Gum in France. The experiments made in Paris show that the winters there are too severe for the plant; but in the South of France, in Algeria, in Corsica, in Spain, in Italy- in all the climates intermediate between the hot and the temperate, in short, the cultivation has been very successful.

In Australia it forms immense ever-green forests, each tree rising to the height of two hundred or even three hundred feet. Mr. Bateman says: "In addition to the already generally well-known merits of the Eucalyptus Globulus, samples have been found in some of the glens in Australia of a size exceeding the far-famed *Wellingtonea Gigantea*," and reminds me that the long seats in the Royal Horticultural Society's Garden, South Kensington, are single planks of this tree. It casts its peculiar bark instead of its leaves. The leaves grow in a remarkable manner, being as it were set on edgewise, and consequently wonderfully little shade is afforded even by the large trees. The smaller specimens (twenty or thirty feet high) that I have had an opportunity of observing in the South of France give absolutely no shade at all. In spite of this peculiarity of foliage, the Eucalyptus is graceful and elegant and an eminently ornamental tree. The trunk, off which the outer layers of bark detach themselves as in the Oriental plum, is smooth and ash coloured; the leaves are bluish green or when young often glaucous, varying from six inches to a foot in length, and the flowers are large and axillary, growing close to the stem, either singly or in clusters of two or three. Of these flowers bees are remarkably fond, and from them they obtain a greater amount of honey than from any of the better known flowers. Indeed the European honey bee introduced into Australia has spread and flourished to a marvellous extent in the Eucalyptus forests of that continent. But while the bee affects

the Eucalyptus the locust is equally averse to it ; and it was especially noticed by Ramel in 1865 that in a part of Senegal, where *Eucalyptus Globulus* had been introduced, when the leaves of all other trees were devoured by the locust, those of the *Eucalyptus* resisted their attacks.

But considering the advantages to be derived from the introduction of the Eucalyptus into India we may look at it specially from two points of view—the value of the tree in forest plantations, and the value as an antidote to malaria. Now with regard to the first of these, there is one peculiar characteristic of the Eucalyptus which commends it to our special attention, and that is its marvellous rapid growth. I have myself seen specimens which had grown 13 feet in twelve months, in a pot, in a cool conservatory in the north of England ; and at Cannes, in the South of France, where the Blue Gum (*Eucalyptus Globulus*) has been introduced with great success, I have seen trees between twenty and thirty feet high of less than three years growth. The Blue Gum requires a plentiful supply of water, but some other species thrive equally well in a dry soil, but all require sun, and none can stand more than a few degrees of frost. M. Papillon, in a recent paper on the Eucalyptus published in the *Moniteur Scientifique*, Quesneville, says—

"As to the rapidity of growth in the Eucalyptus, if it is sown in spring, a sprout "several metres length will appear in summer. The growth of the second and third "years is very rapid. Thereafter there is less increase of height, but the trunk "thickens. Eucalypti of eight to 10 years growth have a mean height of 18 to 20 "metres, and a circumference I. 10 m. to I. 18 m. at 60 centimetres above the "ground."

In India, where such large tracts of country are available for forest plantations, and where cheap fire-wood is so essential, the cultivation of such a tree as the Eucalyptus would be attended with incalculable advantages. According to Monsieur Trottier, in a report presented to the Algerian Society of Agriculture, the Eucalyptus is eminently suited for the wooding of a country. Forests of Eucalyptus will give in 15 or 20 years, what it will take 100 to 150 years to obtain from ordinary forests. The entire value of the forests in France is 4,137,995,288 fr. Allowing them (on an average) to be entirely cut down in 100 years, the Eucalyptus might during the same period be cut five times, that is, every 20 years. The product of the forest would thus be quintupled. It is calculated that a hectare would readily contain 3 [illegible] trees. Cut at the end of three years, when the dimensions of the wood render it suitable for the work of wheelwrights and others, they would have a value of 2[illegible] fr., and in eight years more their value would be 6,200 fr.

The timber of the Eucalyptus, or Gum tree as it is commonly called in Australia, is highly valued in that country, and has been used with great success in ship building. When green it is soft and easily worked, but when it dries it becomes exceedingly hard. The bark of some species abounds in tannin to a much greater extent than the oak bark of commerce. When the trunk of the tree is bruised or tapped as Pines are in France, there is a copious flow of resinous sap, which in some species is astringent, in others saccharine ; in all it is more or less resinous. This sap is used in medicine, and in the preparation of various fermented liquors. The [illegible] of one species has been found a valuable substitute for Kino, and as such is largely used under the name of Botany Bay Kino.

It was at one time considered that an infusion of the leaves of the Eucalyptus made a valuable febrifuge, and Professor Vauquelin obtained an alkaloid from the bark which he considered might serve the purposes of Quinine.

Mr. Broughton, however, Government Chemist at Ootacamund, analyzed the bark and leaves, and found neither quinine, quinidine, nor cinchonidine. Monsieur Clöey, a French Chemist, has extracted from the bark an essence analogous to camphor.

But whatever may be the medicinal value of either sap, bark or leaves of this extraordinary tree, it would appear to be far inferior and much less remarkable than that of the growing tree itself. For it is said that the Eucalyptus has the property of banishing fever and ague from its immediate neighbourhood and rendering healthy by its presence the most malarious and fever-stricken districts. Mr. Sowerby, in a private letter on the subject before alluded to, says—"As to its "*prophylactic properties, it is very difficult to say anything without very good evidence*; "*of course, the fact that all parts of the plant are highly charged* with a very "strong smelling volatile oil would tend that way; but has the property been "noticed as a fact with regard to, say, the camphor, and the several spice trees?"

Dr. Hooker, F. R. S., is also somewhat inclined to doubt "the specific merit of the Eucalyptus itself" in this respect, and the greatest weight would naturally be attached to his opinion; but it is only fair to hear all that can be said on both sides, but the French Botanists who have had opportunities of personal investigation are decidedly of opinion that the Eucalyptus even possesses the most valuable prophylactic properties.

I quote the following from the *Gardener's Chronicle* of 22nd November 1873. "The tree grows rapidly, and possesses the power of destroying the malarious "agency which is supposed to cause fever. It absorbs as much as ten times its "weight of water from the soil, and emits camphorous antiseptic vapour from its "leaves. The same tree has been tried with success at the Cape of Good Hope. A "farm some 20 miles from Algiers was noted for its pestilential air in the spring of "1867; 13,000 Eucalyptus were planted there, since which time not a single case "of fever has occurred. Numerous other like cases are cited. We presume these "statements are substantially correct, although there may be some errors of detail, "or interpretation of facts. A similar case is on record with reference to the Sun-"flower. The Observatory at Washington, U.S., was placed in a very unhealthy "marshy situation, and at certain periods of the year fever was rife in the neighbour-"hood, but after the ground was annually sown with Sunflower, the sanitary condi-"tion was much improved. As to the Eucalyptus, the honour of discovering this "property is due to Sir W. Macarthur, of Camden, Sydney, Australia, to whom the "credit is given by M. Naudin in an article in the *Revue Horticole*, 1861, p. 205, en-"titled 'Plantations Hygieniques.' This is a new and most important fact for the "forest conservators."

"The leaves and the roots have a wonderful absorptive power for moisture, "which accounts for its very rapid growth. M. Trotteau put a branch of Eucalyptus "weighing 800 grammes in a vessel full of water, at 6 in the morning. By 6 o'clock "P. M. the vessel had lost 2,600 kilos., and the branch weighed 825 grammes. The "temperature during the day was about 40 degrees. On the other hand M. Carlotti "macerated 25 kilos. of Eucalyptus leaves in 22 litres of water, and found that the "liquid increased by 1 litre, the leaves having given up their water."

In consequence of this remarkable quality the tree is of especial value in marshy districts, where the superabundant moisture is not only absorbed but the antiseptic vapours and aromatic emanations from the leaves counteract miasma.

A. B. M. writing to the *Gardener's Chronicle* (10th August 1872) says—"In "marshy districts the Eucalyptus has a most salubrious influence, absorbing the "moisture and emitting antiseptic vapours. And it is observed that where the tree "grows largely the climate is a healthy one. This is the case in Australia; and, "more recently, since the plant has been introduced into Algeria the improvement "has made itself felt. Intermittent fever vanishes before it."

A paper read by Dr. Gimbert at a meeting of the French Institute in October 1873 on this subject, which I have unfortunately not been able to procure, cannot

fail to be of interest. Dr. Gimbert is a man well known in the South of France f his scientific attainments. In default of better authority the following extract fr the *Daily Telegraph* (2nd November 1873) on the subject of Dr. Gimbert's pap may be quoted with advantage.

"Where the *Eucalyptus* is thickly planted in marshy tracts, the subsoil is sa "to be drained in a little while as though by extensive piping. Miasma ceases, "are told, wherever the *Eucalyptus* flourishes. It has been tried for this purpose "the Cape, and within two or three years has completely changed the climatic co "dition of the unhealthy parts of that colony. Somewhat later, its plantation w "undertaken on a large scale in various parts of Algeria. At a farm twenty mil "from Algiers, situated on the banks of a river, and noted for its extremely pestile "tial air, about 13,000 Eucalypti were planted. In the same year, at the time wh "the fever season used to set in, not a single case occurred; yet the trees were n "more than nine feet high. Since then, complete immunity from fever has be "maintained. In the neighbourhood of Constantina, it is also stated was anoth "noted fever spot, covered with marsh-water both in winter and summer; in five yea "the whole ground was dried up by 14,000 of these trees, and farmers and childr "enjoy excellent health. Throughout Cuba, marsh diseases are fast disappeari "from all the unhealthy districts where this tree has been introduced. A statio "house, again, at one end of a railway viaduct in the department of the Var, was "pestilential that the officials could not be kept there longer than a year; forty "the trees were planted, and it is now as healthy as any other place on the lin "Such are some of the facts brought forward by M. Gimbert."

In an article in the *Gardener's Chronicle* referring to the *Comptes Rendus* o the Academie de Sciences of Paris, p. 764, 6th October 1873, a very interestin account by Dr. Gimbert will be found of the experiments made in Algeria with regar to the virtues of the *Eucalyptus Globulus*.

I extract the following on the same subject from a late number of the *India Medical Gazette*. "At Zondouk, writes Mr. Trottier, I possessed property with "house near the River Hamyze. The emanations from the damp soil struck dow "the farmers and their servants annually with malarious fever. In the spring "1867, I planted 13,000 trees of *Eucalyptus Globulus*; in July they had grown "about three yards in height, and even these were sufficient to ward off the usu "continual outbreak of fever, and the place has since remained free from it. Th "farm of Ben Machydlin, Constantine, was notorious for its insalubrity; it was cov "ed with marshes, winter and summer. Now they have disappeared; 14,000 "the *Eucalyptus* were planted, and in five years they have completely dried the so "the tenants no longer suffer from intermittent fever, and their children are "splendid health and vigour. (Watterer, Bulletin de la Société d'Acclimatation.)

"The factory of Gué, at Constantine, was surrounded by a marsh, the pes "ential emanations from which rendered the working of the establishment imposs "during summer. M. Zantiere sowed a large quantity of *Eucalyptus*, and in th "years a large acreage of morass was converted into a magnificent park. The wa "was literally drunk up by the trees, and the workmen have no more fever. On "banks of the Var a house was built close to a dyke which banked up the river "industrial purposes. The persons living in the house had to be changed repeatedl "their health was ruined by the marsh poison. Mr. Villiard, engineer of that sec "of the road, planted two years ago forty trees in the neighbourhood of the hou "from that year the officers were preserved from fever, and this station has since b "perfectly healthy. These facts, related in the *Comptes Rendus of the Academ Sciences*, with the reports of agricultural committees and confirmatory docum "are of a nature to render comment unnecessary. To medical men, and indee "others also, this tree has the further interest that its products are of consid

"medicinal value, and possess many of the valuable anti-periodic properties of quinine. "It serves, in truth, not only as a preventive but a curer of intermittent fevers." "(*The London Medical Record of Progress of Medicine, &c.*; December 17, 1873.)"

I have mentioned that the English botanists are not quite so sanguine as to the prophylactic powers of the Eucalyptus as the French; but a German savant, Dr. Hermann Offinger, attributes the contradictory results obtained by various observers to the fact that there are two varieties of leaves; which he distinguishes as *Eucalyptus Globulus latifolius*, and *Eucalyptus Globulus longifolius*. The former he found to have little or no effect as a prophylactic, the latter hardly ever failed. It is well known to botanists that the leaves of some of the Eucalypti vary in form according to the age of the trees. The long leaved form above described occurs on the older branches, and it may be that they contain more of the active principle on which their medicinal effects depend than the shorter leaves, produced on the younger, faster growing and more herbaceous shoots. As Dr. Offinger appears to be one who decides when "Doctors disagree" let us hope his solution is the correct one, and that *Latifolius* may yet flourish in the Panjab and banish fever from the province.

Finally, with regard to the practical mode of cultivating the Eucalyptus, I may mention that I brought out some seeds from London, which I sowed in a pot about three months ago. The weather was, I suppose, too cold, for only three seeds came up, but a second sowing about three weeks ago has been much more successful, and I have now between forty and fifty healthy seedlings. With regard to the procuring of seed, the best and *freshest* will no doubt be obtainable in Sydney or Melbourne. In Europe, Marseilles would be the most likely place. I got mine from Veitch in London; but there can be no doubt that in cases when seed is required in any quantity it had better be ordered from Australia both on account of freshness and cheapness.

The following note was published in the *Gardener's Chronicle* for December 13th, 1873, and may be appropriately introduced at the close of this memorandum.

"THE EUCALYPTUS.—The best method and time of sowing the seed is under "glass, either in a frame or by covering the box over with a piece of glass, and dur- "ing the months of September and October. After they have attained the height of 3 "inches pot them off into small 2 inch pots; when these have attained considerable "strength, either shift them into larger, or plant them permanently in the ground, "which may be done during the months of February or March, according as the rain "falls, or they may be left till the following July or August; this is best regulated "according to the situation of the land, taking care that they are not exposed to the "cold south-west winds when young and tender, or the frost will be likely to kill "them.

"The soil most adapted to the raising of these plants is a mixture of equal "parts of vegetable mould, ordinary soil, rotten manure, and sand. When they are "about 3 feet high they are best planted in the ground. First dig a hole 2 feet deep "by 2 feet across the top, put the best soil at the bottom; let these holes be filled "with water or left open till after a heavy rain; having put the best soil at the bot- "tom, take the plants, spread out the roots, then put in the remaining soil, leaving a "slight hollow so that the rain may penetrate after every shower. When they begin "to grow fast, drive in three stakes across each other near the bottom of the stem, "in the form of a triangle, placing some hay round the stem and a piece of wire to "secure the stakes round the tree; in this way the trees are quite safe from being "blown down, and are not injured by the string being left round them too long. After "six or seven years the wood will be found very useful for posts, or long poles, and "makes the best of firewood." *F. X. Pippet, Buenos Ayres, Sept. 13.*

U. R. BURKE,

Lahore, 4th February 1874.

Selection from the Records of the Financial Commissioner's Office, No. 18.

No. XLVI.—NORTON'S TUBE WELLS.

From T. H. Thornton, Esquire, Secretary to Government, Panjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjab, No. 64, dated Lahore, 6th January 1869.

Requests attention to the advertisement at page 1152 of the accompanying pamphlet, descriptive of Norton's Patent Tube Well, and suggests that the Financial Commissioner take measures for ordering from England three or four tubes, a patent sand filter, force pump, and driving apparatus; debiting the cost to the budget allotment for the improvement of agriculture.

SIR,—As the holder of the Patent for Norton's Tube Well in India, I should have addressed you sooner on the subject of this well as used with the Abyssinian Army, had it not been that I was anxious to have practical experience concerning the general applicability and importance of the invention, before intruding on your space, or pledging my name in what some still look upon with suspicion, if not doubt. Eleven months have now elapsed since I saw the first Tube Well driven to a depth of 15 feet in sand and gravel, the pump fixed, and yielding water within twenty minutes. With all new inventions, doubts, difficulties, and prejudices have to be overcome; and I need only refer to the sewing machine as a well known instance of this. However, the tube well is meeting with a fair proportion of success, and I am now able to speak with some authority as to where the invention is likely to be valuable, doubtful, or of no use. And I would particularly draw attention to the fact that where large supplies of water are required from the tube well (as for irrigation), it is desirable that the water-holding stratum permits of free percolation. In gravel, shingle, coarse sand, broken chalk, and such like, the success is unquestionable, and by driving on carefully to the bottom of such water-holding stratum, taking care not to drive the perforated end through and out of the same the supply is only limited by the quantity the several strata hold, whether it extends ten or a thousand yards square, one or twenty feet deep. On the other hand, where the water is held in close soils, such as brick earth, compact marl, or tight fine sand, the yield of water will be doubtful, at all times small, possibly too small to render the use of the patent tube well of value. In clay, water is not to be found, so that any supply must be taken from above the clay; or the clay must be pierced through its entire depth. Several instances have occurred in England and France where, after piercing a layer of clay to the depth of 50 or 80 feet, that the water has risen to the surface, or to within a few feet of it. Where such localities are to be found in India, such as in the valleys and at the foot of hill ranges, the three inch tube will be found invaluable for irrigation, often forming artesian wells. However, in all cases where the strata and depth of water are not known, it would be desirable to test with the small tube as both cheaper and easier driven.

Where the soil from surface to water is not very hard, I prefer screwing in the larger tube wells if the depth does not exceed 20 or 30 feet. It is quicker, and dispenses with the somewhat cumbrous tackle necessary for tubes of 3 inches diameter. On the plains of India, where the water level is found within 30 feet of the surface, and within the lifting distance of an ordinary suction pump, I consider the invention of immense importance, for irrigation, cantonments, dawk bungalows, troops on the march, the parade ground, and in barracks. Besides having the water uncontaminated, as in a river, tank, or open well, it is several degrees cooler than water so obtained.

With manual labour, on an average, the inch and a quarter tube well attached to a three inch pump, gives 480 gallons per hour; a two inch well with a four and a half inch pump 1,600 gallons, and a three inch tube well with a six inch pump 9,800 gallons. Of course, with steam, horse, or bullock power, the yield is greater and can be increased by sinking a number of such wells, and coupling them together. At Messrs. Allsopps' Brewery, Burton-on-Trent, there are five three inch tube wells so fixed and attached to a large steam pump giving 22,000 gallons per hour.

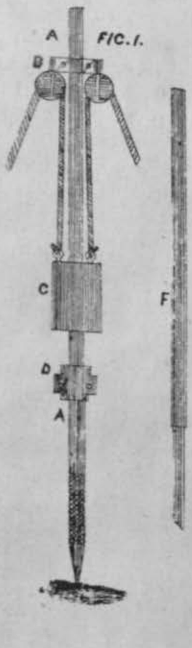
Amongst the Engineers, and Sapper and Miners lately returned to India from Abyssinia, there are many who can testify to the value and simplicity of the invention, and are as conversant with fixing these wells as parties in this country. Too much attention cannot be paid to making all the connections air-tight, white-leading the male screw. Driving tackle is necessary in order to sink one of these wells, but once obtained, will serve to sink an indefinite number; it may therefore be desirable for parties at up-country stations to unite in obtaining the same.

Prices and other particulars can be obtained from the local Agents as advertised.

C. JOLLIFEE BARTER.

6, Mincing Lane, London, September, 1868.

DIRECTIONS FOR DRIVING NORTON'S PATENT TUBE WELLS.



IT is desirable, as a general rule, before driving these wells, to ascertain, when practicable, the approximate depth at which water is usually found in the locality where they are required, either by inspecting existing dug wells, or by consulting a geological chart of the strata of the district.

Knowing beforehand what depth the well has to be driven, will be a guide as to the proper lengths of tubes to be used. If no such information can be obtained, it is necessary, when driving, to pass the plummet, at frequent intervals, down the tube, to sound whether water is struck; otherwise, by not paying attention to this, the tube may be driven right through the water-bearing stratum without the operator being aware of it.

The Patent Tube Well, as ordinarily used, is not intended for piercing rock or solid stone formations, but it is quite capable of penetrating very hard and compact soils, and can also be successfully driven through chalk, breaking through the flints which may obstruct its passage downward, but when rock or stone is reached, and has to be pierced, *special means of drilling* have to be provided for it. When coming upon rock or stone, the best plan is to pull up the tube and try in another spot; this applies also when deep beds of clay are driven into, for it is better to pull up the tubes, and go a little distance off and test again, as in many cases, by so doing water will be found.

Two men are necessary in driving the small wells; and having selected the spot where the well is to be driven, the clamp D, with its broad end uppermost, is firmly fastened by means of two bolts (the coupling at the end of the tube having been previously removed) on the perforated tube A, at a distance of about two or three feet from the point. The clamp must not be screwed too tight at first, but the bolts should be tightened after striking a few blows with the monkey C; this allows the grooves inside of the clamp D to bite into the tube A. Care must be taken to keep the bolts tightened up when driving, as the jarring of the monkey may, in very hard ground, have a tendency to unscrew them.

The monkey or weight C is next slipped on to the tube A above the clamp D. The pair of pulleys B should now be securely fastened to the tube A about six feet above the clamp D.

The pair of ropes having been fastened to the monkey C and passed over the sheaves of the pulleys B, the tube A is elevated from the ground and placed upright.

One man now holds the tube A in this position, while another lifts the monkey C and allows it to fall two or three times on to the clamp D; this serves to force the tube A sufficiently into the ground to enable it to stand by itself. Care should be taken to adjust the tube perfectly perpendicular. Both men now pull up the monkey C by means of the ropes which have been passed over the pulleys B, allowing it to fall on to the clamp D, until by repeated blows it reaches the ground. The clamp D has now to be loosened and raised about two feet, and again fastened to the tube A, as directed above, and the pulleys B are also to be adjusted a corresponding distance higher up.

When the ground or strata is found to be very hard, the clamp D should not be fixed more than fifteen or sixteen inches above the ground, and in order to prevent it slipping care should be taken to keep the bolts perfectly tight.

This process of driving, as above described, is continued until the top of the tube comes within about six feet of the ground.

The lengthening bar F has now to be brought into requisition, by placing its small end into the tube which is being driven.

The object of this lengthening bar F is to obtain a temporary additional height of tube upon which to fasten the pulleys B, for the purpose of driving the Well Tube, until its upper extremity comes within a foot of the ground. This lengthening bar F is then dispensed with, and another length of tube is screwed on to the tube A, by means of ordinary gas tongs. The joint must be carefully white-leaded. The clamp D must be fastened on to the *fresh length* of tube, and the monkey slipped on before it is screwed on to the tube A that is in the ground. One man holds the tube upright, while the other screws it round.

Driving is again continued as before, taking care frequently to test for water with the plummet; and when the tube has been driven some depth into the water-strata, the pump may be applied.

First *white-lead the thread screw* on the pump and screw it on the tube. Next pour in a little water into the pump to soften the bucket leather in order to prime it and make it work air-tight. A little patience may be requisite at first to start the pump, particularly if the strata is a very close and compact one, and the best plan is to pour down a little water and by working the pump quickly and with short strokes a yield is soon obtained.

The water at first is more or less muddy, according to the nature of the strata, but by steady pumping it will in time clear up and be fit for use.

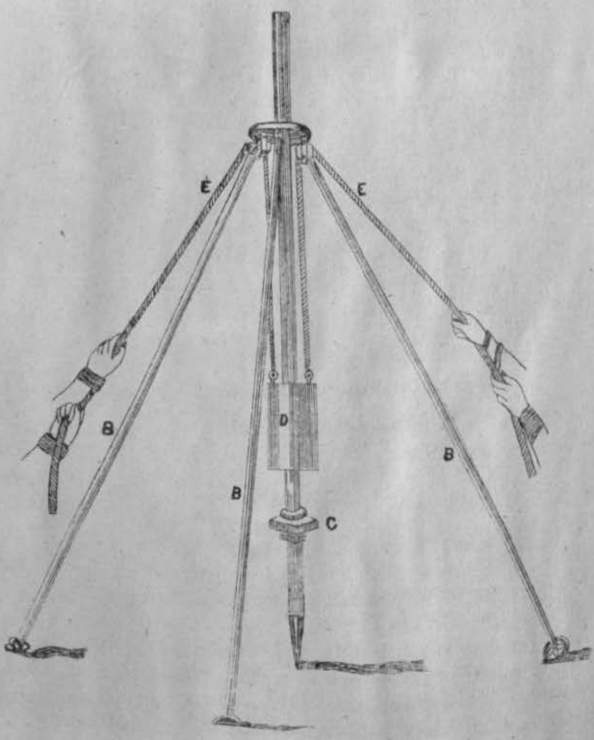
Should the ground through which the tube has been driven prove of such a clayey or sandy nature as to find its way through the perforated tube A, to any extent, so that when the pump is put on, the water cannot penetrate through the accumulation in the tube, it is necessary to use the small clearing-out tubes. A sufficient number of these must be screwed together to reach to the bottom of the Well Tube. The reducing socket has to be screwed on to the upper end of the small tubes, and the pump is screwed into this socket; this done, the water which has been poured down the Well Tube will by degrees moisten the earth, which can be pumped up through the small tube, while fresh water is being poured down the Well Tube; until, by this means, all the earth which has accumulated in the tube has been cleared out. When this has been accomplished, the small tubes can be withdrawn, and the pump having been screwed on to the Well Tube, the Well is complete.

To facilitate pouring water down the Well Tube, for the purpose of cleaning it out, a funnel is furnished, which can be screwed on to the Well Tube.

It might also happen that the Well Tube may have been driven through the water-bearing stratum; should this occur, the Well Tube can be readily drawn up to the water-stratum again.

In driving the tube, should rock be met with, or from any other cause it is found necessary to withdraw, this may be accomplished by fastening the clamp D to the tube a few inches from the ground; and by applying a lever at each side, raise it a short distance, lowering the clamp after each successive lift. Another plan of withdrawing the tube is to put the monkey C on the pipe the reverse way to what it is when driving the well, and then fasten the clamp D on the tube also the reverse way, about one foot above the monkey C. A man on each side pulls up the monkey against the clamp, and drives it upward out of the ground; when all the tubes are withdrawn, they may be re-driven in another spot. In withdrawing the tubes each length must be unscrewed as it is raised.

In some very solid strata, it is necessary, in order to open up the water-way to the Well Tube, to use a force-pump on the top of the tube, and by forcing water down under great pressure, the strata will be forced, and water communications opened to the Well Tube, and when water flow freely down the tube without forcing the operation is generally complete. This application of the force-pump is also of great service when the Well Tube may be in a "pot" of clay, in the immediate vicinity of water, for by forcing water down, a water-way is opened to the water-bearing stratum, and a good well is thus obtained.



The foregoing sketch represents another mode of driving, introducing a tripod or shearlegs B B B, upon which the pulleys are carried, in place of being clamped to the tube as shown in first sketch, thus saving the time and trouble of adjusting the pulleys, also serving to steady the tubes while driving.

Extract paras 1 and 5, of a letter from E. A. Prinsep, Esquire, Settlement Commissioner, Panjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjab, No. 38, dated 20th May 1870.

"1. Referring to your No. 443, dated 20th January 1870, I have to report for the information of His Honor the Lieutenant-Governor the safe arrival at this station from Kurachi of 4 boxes containing 6 Norton's Tube Wells, hand pumps belonging to the same, and apparatus for driving them into the ground.

5. One of these Tube wells I have made over to Mr. Saunders, Deputy Commissioner of Jálandhar, to put up in an experimental way in the Queen's Gardens. Colonel Sandilands and Mr. Wright, Executive Engineers, were present yesterday and aided Mr. Saunders in putting one into the ground. The drive down into the water-bearing stratum was most successful. The whole operation was concluded in something short of 2 hours and a small body of water was pumped up, but it was thought better to sink it deeper and allow the water to accumulate in any chamber that may have been found in the sand bed below. It is apprehended that the very fine sand into which it has been embedded may tend to choke up the supply holes in the tube."

From E. A. Prinsep, Esquire, Settlement Commissioner, Panjab, to J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjab, No. 114, dated 10th September 1870.

"I am now able tc submit report upon the further experiment with Norton's Tube wells, which I promised in my No. 38, dated 20th May last.

2. These experiments were conducted more or less in the presence of Mr. Saunders, Deputy Commissioner of Jálandhar, Mr. Pitcaithly the Superintendent of my office, and myself. Messrs. Wright and Kirby, Executive Engineers of Jálandhar and Dharmsala, have been present and helped us with their advice.

3. As direct supervision was conducted by Mr. Pitcaithly, who has been present and taken an energetic interest in all the experiments, I have asked him to draw up a memo, which is now enclosed for the perusal of superior authority. I have been much indebted to him for the exertions he has made.

4. I regret to have to report that the results of these experiments only confirm the apprehensicn expressed in the 4th para of my first letter, that without sand filters these Tube wells will not work satisfactorily in the way in which they were intended to work by the inventor, though they might be turned to some account in other ways as shown in Mr. Pitcaithly's report.

5. For purposes of irrigation, even of small areas, I fear there is little hope of their being of much real use, even supposing the sand obstruction is got over; the tube is so small (only 1 inch) the pump brings up so little water compared with the labor of working it, that for all manual purposes they are not likely to be appreciated.

6. For raising water for drinking purposes I think they might do, even without sand filters, provided they are sunk in such places where the water-bearing stratum is gravelly or pebbly, free from sand, and the water supply full and con-

stant; anywhere near Jálandhar these conditions cannot be fulfilled, for here there is nothing but sand, though the water is not deep, the springs are scanty, it frequently happens that the water supply in wells even is exhausted before half the day is over.

7. As far as I am able at present to judge, the plan carried out by Mr. Pitcaithly of digging a *kucha* well first and sinking the tube in it, then filling up so as to allow sufficient space for water to accumulate in a reservoir at the bottom of the tube might answer for drinking purposes, but the place would have to be built up of solid masonry, say 4 feet in diameter and 4 feet high, so as to form a support against the sand being drawn up and clogging the tube. This would never cost more than perhaps from 20 to 30 rupees additional over the cost of the tube wells. So that for Rs. 100 these wells might prove of use for household purposes. For supplying cool drinking water to soldiers near barracks, perhaps this plan might be tried with advantage.

8. Mr. Saunders informs me that a Mr. Keane, the Superintendent of the Nahun Iron Works, offers to supply sand filters, also bullock gear. He also understands there is some very cheap bullock gear obtainable at Madhopur, but I do not see the necessity of applying bullock power until first we find that these tube wells will answer in such places in the plains where there are water-bearing strata, or until we obtain a tube well of somewhat greater dimension than merely 1 inch width, for these only bring up but a limited supply of water quite insufficient for purposes of irrigation. This was the opinion of Mr. Kirby, when be saw the pump work in the most favorable place even close to the garden well.

9. One or two sand filters might be obtained from Nahun if Financial Commissioner thinks this desirable, and a new experiment be tried with them in the Jálandhar Cantonment.

10. I wish to know what steps shall be taken for the distribution of these 6 tube wells. My former letter contained proposals on this head. Mr. Kirby has expressed a wish that one might be sent up to him, as he believes he could make very good public use of it either at Dharmsala or Bhagsoo Cantonments, or at Palumpur to be ready for the fair, or somewhere in Kángra valley. I now recommend this in lieu of my proposal to send one to Multán, where the sand difficulty it is feared, will equally apply.

11. One I should like to see tried in the cantonment in the lines of 92nd Gordon Highlanders, for drinking purposes, to be put up by the Executive Engineer in the way described in para 7 above.

12. The other four might be advantageously tried thus:—

1 at Dalhousi under Mr. Purdon's orders.

1 at Amritsar under Mr. Halsey, in the ground where the local fairs are usually held, the ground being damp and low and of cloggy formation.

1 at Lahore in the garden of any enterprising native gentleman who will try the experiment, under the supervision of Kunaya Lal, Assistant Executive Engineer.

1 might be sent to Deputy Commissioner Siálkot, to be tried in the tract of country known as the "*Charkharri Mehal*," which represents a great irrigated zone, famous for having within it a great unseen reservoir which supplies water to more than 4,00,000 acres; a fit spot should be selected. I suggest some village in the "Aikwala" Circle, which lies low and where water in the wells is generally found from 20 to 25 feet, and which may happen to be on any

public road, so that if it works well, it may be used for drinking purposes by travellers, and in this way its capabilities would be brought into fair trial.

I suggest this distribution in lieu of what I proposed in paras 6 and 7 of my previous letter.

13. The distribution might be made gradually so as to allow time for the driving gear to go from one district to the other, the places are not far from each other. In this way we shall be enabled to make further trials in 6 other places ; all with a different object.

14. I request that the wishes of His Honor the Lieutenant-Governor may be taken upon these proposals."

Memo on the experiments with Norton's Tube Wells, conducted in the Queen's Gardens at Jálandhar, drawn up by order of Settlement Commissioner.

After the first experiment previously reported on, it was found that the tube then sunk would not draw, and after some unsuccessful attempts to clear it with the apparatus provided for that purpose, it was drawn up and found to contain no less than 9 feet of sand and clay. This being cleared out by hand the tube was sunk in another spot. The sinking was accomplished in less than an hour, and on the pump being fixed, a small quantity of water was drawn up, as in the first experiment, but after a short time this also ceased, and it was found that the tube had clogged. Daily efforts were made for some time to work the pump, but without effect, and at last this too was pulled up and found to be filled, as before, with sand and clay to the depth of nearly 10 feet. After cleaning, the tube was again put down in the same place, in the hope that the hole already made would fill with water and enable the pump to be worked at least for a time sufficient to allow of the sand immediately surrounding the point of the tube being drawn up with the water, but here again, after the first few strokes of the pump handle the tube got choked with sand.

Up to this time a fair trial had not been given to the "clearing tube" or instrument for removing superfluous sand from the well tube.

2. We began to despond, all our efforts to make the experiment a success had failed, and we began to doubt the efficacy of the invention. It was known that the sucking pump acted on the principle of removing the atmospheric pressure from a column of liquid, thus causing a vacuum in the pump and allowing the atmospheric pressure on the surface of the liquid *outside of the pump* to force up and balance the column of liquid. It was also known that in this district the water-bearing stratum was in compact, close-lying sand, allowing of no air room. How then was it possible for the atmosphere to press on the surface of the liquid outside the pump? But our doubts were solved by the opportune arrival of Mr. Kirby, Executive Engineer of Kangra, who saw no reason why the tube should not work, and accordingly had it drawn up and re-sunk in close proximity to the pakka well.

3. Here the tube was only sunk 22 feet from the surface of the ground, which is little below the surface of the water stratum, but it worked admirably, a steady flow of water mixed with a little sand was obtained and continued for an hour. Darkness coming on, work was stopped and next morning the tube was again choked with sand.

The clearing tube was then applied with great success, all the sand being pumped out in about an hour, and after that the water came up steadily as long as the pump was worked, but as soon as that was stopped, it became necessary to use the clearing tube. This had to be done 6 or 8 times during the day, and the

same number of times for 4 or 5 days after. As soon as the pump was stopped, sand settled in the tube and prevented any further supply of water coming to the surface.

4. This experiment was therefore a partial failure, for 2 reasons, *(1st)* that though considerable quantities of water came up the sand could not be prevented from accumulating in the tube as soon as the pump was stopped; *(2nd)* the trial having been conducted in close proximity to a pucka well, which was constantly worked by a Persian wheel, it was supposed that the point of the tube well had reached a hollow space already created by the fall of the sand into the pucka well, as no such hollow could be found at any distance from the pucka well, this was not quite a fair trial.

5. All this showed that without the sand filters the tubes would not work, and the Settlement Commissioner determined, with the aid of Mr. Saunders, to try whether they would work in a water-bearing stratum of pebble or stone. No such stratum could be found in this district and it was decided to make an artificial one.

Accordingly a cheap kutcha well of the usual kind was excavated, the lower portion surrounded with bands of twigs tied together to prevent the ingress of sand, and the centre (from the surface of the water only to the foot of the well) filled up with broken bricks.

Into this the tube was inserted and the excavation refilled with the earth which had been taken from it. The pump was then tried and worked admirably and continues to do so to the present moment.

6. This last experiment conclusively proves that the only hindrance to the working of Norton's tube wells in a country (like the district of Jalandhar) where the water lies in sand, is the absence of some appliance for keeping the sand out of the tube, and at the same time permitting of a free ingress of water. The sand filter is said to fulfil these conditions, but I have had no opportuinty of trying it.

7. The last experiment also shows that even without the sand filters the tube wells may be made of great use to the community. The excavation of a narrow kutcha well, and the procuring of 2 or 3 cart loads of broken bricks or kankar will not cost more than 10 rupees. For this sum, added to the cost of the tube well itself, the following advantages can be secured—(I) the well once filled in there can be no falling in of the sides; (II) no repairs will ever be required; (III) a perfectly cool supply of water can be obtained in the hottest weather, for when all access to the outer air is excluded the temperature will remain low and the direct rays of the sun can have no effect 25 feet or so from the surface; and (IV) most important of all, no surface impurities can find their way into the water, and it is therefore perfectly pure; but I must here add a caution that something else must be used to keep out the sand in lieu of twigs, which the experiment has showed us decay in the water and communicate to it a very offensive smell. This we have not yet got rid of and the water is undrinkable in consequence, but had some other material been used water filters and ice would have been superfluities in the Civil Lines of Jalandhar.

8. A tube well without sand filters put down as in the last para would thus be of great use, in a sanatary point of view, in any locality where the impurity of the water is supposed to be the predisposing cause of sickness, and those now in store might be distributed for this purpose, or they might be tried in other districts, especially those in which the water is found in pebbles or stones.

9. It may be useful to add that the tubes received ($1\frac{1}{4}$ inch diameter) are too small for irrigation purposes unless for small plots, such as those in which tobacco and the like crops are cultivated. It has been found in practice that the working

of the pump handle involves more muscular exertion than a native cultivator is able continuously to devote to it. Four coolies, it was found, were required to work it the whole day.

From J. A. E. Miller, Esquire, Secretary to Financial Commissioner, Panjab, to T. H. Thornton, Esquire, Secretary to Government, Panjab, No. 619, dated 19th September 1870.

In reply to your No. 438, dated 8th June last, I am directed to submit in original a letter No. 114, dated 10th current, from the Settlement Commissioner, reporting the results of the further experiments made at Jálandhar with Norton's Tube Wells.

2. This report shows that the tube wells do not answer at Jálandhar.

The sand which prevails in the water-bearing stratum of that district invariably chokes the pumps when it is used in the ordinary way. When used merely as a common pump with the end placed in a reservoir, it answers well enough, but the utility of the contrivance consists mainly of the facility of using it without making any excavation to receive the suction tube.

3. An important part of the apparatus, *viz.*, the sand filter, was not sent out with each pump, and the absence of these has no doubt made the experiment fail. The Financial Commissioner thinks that one of the sand filters which Mr. Keane proposes to make should be ordered and tried.

4. The distribution of tube wells to—

1 Jálandhar Cantonment,
1 Dharmsalah,
1 Dalhousie,

recommended by Mr. Prinsep should, the Financial Commissioner thinks, be made, but Mr. Egerton would await the result of the trial of the sand filter before distributing the others. If the sand filters made at the Nahun Foundry answer, Mr. Egerton is of opinion they should be applied to all the pumps, and the remainder of these tube wells may then be distributed as Mr. Prinsep proposes, *viz*:—

1 Lahore.
1 Amritsar.
1 Siálkot.

They are of no use for irrigation purposes, but for a supply of drinking water they may be found to answer. It it probable that in case of cholera or other sickness occurring in Cantonments they may be used in the camps to which troops are sent.

From W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjab, to the Commissioners Jálandhar, Lahore, and Amritsar Divisions, Nos. 10, 11 and 12, dated 2nd January 1872.

Informs him that the Settlement Commissioner has been directed to forward to him * Norton's Tube-Wells for experimental use in the station of—and requests that a report on the working of these wells may be duly furnished.

* Commissioner Jálandhar 2 wells for Jálandhar Cantonment and Dharmsalah.
Commissioner Amritsar 3 wells for Dalhousie, Amritsar and Siálkot.
Commissioner Lahore 1 well for Lahore.

From Major W. G. Davies, Officiating Commissioner and Superintendent Amritsar Division, to W. M. Young Esquire, Officiating Secretary to Financial Commissioner, Panjáb, No. 13, dated 8th January 1872.

Acknowledges the receipt of his No. 12, dated the 2nd instant, and states that the tube wells shall be tried at Amritsar and Siálkot and the result reported, but as regards the third for Dalhousie, suggests that it be tried at Gurdáspur instead. These wells are not intended to pierce rock, and from the results of experiments elsewhere, as reported in the *Agricultural Gazette*, it is quite clear that any attempt to drive them into a mixture of earth and the gneiss which is the composition of the surface of the hills on which Dalhousie stands, would only end in the tubes being broken to pieces, whereas there is at Gurdáspur a soil very suitable for their use.

From W. M. Young, Esquire, Offg. Secretary to Financial Commissioner, Panjáb, to Major W. G. Davies, Offg. Commissioner and Superintendent Amritsar Division, No. 506, dated 22nd January 1872.

In reply to his No. 13 dated 8th current, intimates that the Financial Commissioner approves of his proposal that one of the tube wells be tried at Gurdaspur, instead of at Dalhousie as previously directed.

From C. R. Hawkins, Esquire, Deputy Commissioner, Lahore, to J. W. Smyth, Esqr., Commissioner and Superintendent Lahore Division. No. 555, dated 17th September 1872.

In reply to your Circular No. 12 dated 6th January, I have the honor to report that a Norton's tube pump was received on the 6th March 1872, the driving apparatus did not reach this office till the 6th ultimo, and these required some slight repairs, clearing of screw threads &c., so that the well was not sunk till the 12th current.

2. The experiment was conducted by Mr. Bull, Assistant Secretary to the Municipality, and his memo which I enclose will show very clearly the results obtained. It will be seen that the well was twice sunk in two hours each time, this may be ascribed chiefly to Mr. Bull's skilled supervision, but that the first attempt to obtain water failed owing to the tube being choked with sand, this is mentioned as a probable cause of failure in Messrs. Barter's printed directions for driving the well. On the second occasion the patent sand filter was used with excellent effect, water being raised with little difficulty.

3. It would be useful to supply some spare washers as the pump does not work so freely as it should.

4. The diameter of the tube is too small to admit of the well being used for irrigation purposes, but I do not see any reason why a considerably larger tube should not be driven in the same way to which a V. or other double action pump might be applied, and used with really good effect.

5. At present the well is left open for inspection at the gate of the katcheri, and may be used to some extent for drinking purposes, though I imagine the Hindús will feel some prejudice against the leather sucker of the pump.

6. The driving apparatus will now be forwarded to Siálkot. It is believed that the well is to remain in this district.

Results of Experiments with Norton's Tube Well at Lahore.

The first experiment was tried at the north-west angle of the Anarkali gardens on the mall. The tube well was sunk in two hours, the first 10 feet at the rate of ¼ inch per every stroke of the monkey, but it rapidly increased beyond

that depth to 3 inches, and continued so till it reached the water-holding stratum at a depth of 21 feet, which was ascertained by the plummet; five feet more of the tube was driven in at the rate of 6 inches per stroke, and found on sounding to contain five feet of thick muddy water. The pump was now applied, but would not work; after repeated attempts the clearing out tube was inserted and the well tube filled with water, but after three hours hard pumping the process had to be abandoned. An effort was made to withdraw the clearing tube, but it had so firmly set in the well tube that plans to extract it proved ineffectual, which necessitated the drawing up of the whole apparatus, unscrewing respectively both tubes till the perforated end with the last joint of the clearing out tube was pulled up in an hour and a quarter they were found to be thoroughly choked with 10 feet of sand, and great difficulty was experienced in separating the latter from the former.

The conclusion drawn from the above result was that a *perforated tube only* without filtering arrangements or some method to prevent the choking of the tubes, was not suited to the soil of this station, which appeared from observations taken at the time of sinking to be

Hard loam,	...	10 feet.
Clay,	...	11 feet.
Fine sand,	...	5 feet.
Total sunk,	...	26 feet.

The second experiment was tried at a distance of 100 feet from the former spot, but with the filtering tube instead of the plain percolator. Thus, a length of 22 feet, was driven in two hours, the strata through which it passed appeared to be the same as above. When the full length was driven, soundings were taken and 1 foot 3 inches of water slightly mixed with fine sand was found in the tube well; the pump was now applied and in 26 minutes a muddy flow obtained, the pumping was steadily kept up for a couple of hours, the water clarified to a certain extent and an ordinary sized mashk was filled in 25 minutes.

The following morning, 13th instant, the soundings showed 4 feet 10 inches of water in the well, pumping was renewed in 8 minutes, a mashk filled in 20 minutes, the flow increased rapidly, a second mashk filled in 15 minutes, a third in 10 minutes, and repeated trials in 9 minutes. The pump was set going again in the evening, in 6 minutes, there was a rapid clear flow which became slightly muddy for a few moments. Some of the water was retained in a glass, and the sediments proved to be fine pure sand and mica. An imperial quart measure was carefully experimented with, and it was found that 4 quarts could very conveniently be filled in a minute, making 48 gallons per hour.

On the morning of the 14th the pump was again tried, and produced an yield in two minutes, the flow was copious and water very clear. In a minute 6 quarts were filled, or 72 gallons an hour, being an increase of 24 gallons.

From W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjab, to T. H. Thornton, Esquire, Secretary to Government, Panjab, No. 1199, dated 8th October 1874.

In continuation of this office No. 963, dated 11th October 1872, I am directed to report on the subsequent experiments which have been made with Norton's Tube Wells.

2. In Jálandhar Cantonment the well was first sunk in the public gardens and water found about 18 feet from the surface; the tube worked satisfactorily, but the volume of water pumped up was so small that it was only sufficient for drinking purposes. The tube was then taken up and removed to a spot near the new

Quarter Guard of H. M's. 54th Regiment, but the guard-house was not occupied, so the well was not used.

A well was sent for trial at Dharmsala, but the Deputy Commissioner and Civil Surgeon agreed that it would be of no use in that station.

3. Experiments were also ordered to be made at Dalhousie, but in January 1872 permission was asked to make the trial at Gurdáspur instead, to which the Financial Commissioner consented. The result was reported by the Deputy Commissioner, Gurdáspur in February 1874. Three trials were made in the Sessions house garden on the dry bed of a kacha tank; in a heavy clay soil outside the jail garden; and in the Kanhwán Chamb, where the water was only 4 feet below the surface; but with equally unsuccessful results; on the last mentioned occasion the inside of the tube was found to be choked with moist sand.

The Commissioner remarked that these unsuccessful experiments were made with the well which had been successfully used at Lahore and the result was therefore unaccountable. Three experiments were made with the same well at Siálkot, but the tubes were not long enough to reach the water-bearing stratum. The well was removed to Amritsar for a further trial. In March 1874, the Deputy Commissioner reported that the well had been roughly handled, the screw at the end of each tube being so much worn, that if the pump were driven in, it could not be got out again as the screws would not hold. The pump was accordingly sent to the Madhopur workshops for repair.

4. In April 1874 Captain Palmer, Executive Engineer, Special Works Division, reported an experiment made in the Rambagh garden at Amritsar, which was very successful. The well was sunk without any difficulty; water was found at a depth of 22 feet; the operation of driving the tubes, fitting in the pump, and obtaining the water, took about ½ an hour, but soon the tube became choked with sand. To obviate this the tubes were extracted and the sand filter substituted, after which no trouble was experienced, and a supply of fresh water was constantly obtained. The pump remained at the same spot for nearly a week, and being used constantly did not fail to bring up the water most satisfactorily.

5. Captain Palmer observes that much care should be taken to keep the parts in good order, many of the screws were much damaged, and the screw cutting apparatus was wanting. Beyond this, there was no difficulty in driving the well and obtaining water within half an hour where the spring level did not exceed 24 feet from the surface.

Captain Palmer adds that in 1869-70, while the Amritsar Cholera Commission were pursuing their enquiries, a Norton's tube well was employed for testing the purity of the springs in and about the city of Amritsar, and was found to work most satisfactorily, the tubes being driven at pleasure in various parts of the city, and its suburbs, and water obtained from several places in one day. The addition of the sand filter is said by this officer to be a great improvement and quite sufficient to prevent the choking with sand that used to be experienced.

6. Mr. Miller made an experiment with one of the wells in his compound at Lahore. There is a well in this compound which yields very salt and utterly useless water, but within 150 yards of this well, the apparatus was sunk, and pure water obtained, as also at a further distance. The well could not be extracted without the driving apparatus.

Mr. Miller makes the following general observations on the working of these wells:—

"A trial with a tube well might often save a zamindar or a house owner from wasting money in sinking a well in a place where the water is bad.

"The sinking of the well takes only about two hours and the drawing of the tube up about half the time.

"For purposes of irrigation, even for a garden, a well of this narrow description is of no use. The quantity of water it yields is too small for any thing but drinking purposes.

"Another defect is that the so-called sand filter does not keep out the fine sand to be found beneath the soil in this neighbourhood. The only plan seems to be to go on pumping till the sand is diminished and a cavity is formed round the lower end of the tube. This however takes many hours and would be a disadvantage when water is wanted in a hurry.

"Then again the head of the pump is of too flimsy a character to stand much work. When I received the pump the pivot for the handle was broken off, and now the corresponding pivot at the other side with the projections that hold it have given way, so that the pump cannot be used. This was done by mere ordinary and careful working of the handle, and not by any negligence.

"The handle is too short, to give sufficient leverage, or to allow more than one man to work it.

"The pump itself is too short to get well into the water. I used three lengths of 6 feet each=18 feet, and the perforated tube some 3 or 4 feet more, but the water is rather near the surface in my land. In most places a much longer tube would be required.

"There should also be with each well 2 or 3 lengths of less than 6 feet in order to fit on the top at a convenient height. Though 6 of these wells were supplied to the Panjab only one set of sinking apparatus was sent out by the Home Authorities, under the impression perhaps that the wells were all to be sunk in one place. The wells were sent to six different districts. The result is that each district has to wait till the previous district has done with the sinking aparatus before it can commence its experiments. In this way each experiment takes many months.

"It would be interesting to know to what extent wells have had to be abandoned in the Panjab owing to the water turning out to be salt or brackish. If the number is considerable a Norton's tube well of suitable length in every district might be useful to zamindars intending to sink wells, especially in cases where takavi advances have been granted. Possibly the risk of not finding good water deters many a man from sinking a well. This risk would be obviated by the use of a Norton's tube."

7. The general conclusion to be drawn from the above experiments is that with careful handling and with a complete apparatus, including a sand filter, the well is likely to be of great benefit in testing the purity of the water in any locality where it lies at a depth of not more than 24 feet from the surface.

8. The Financial Commissioner thinks it would be well for a selection from the papers regarding the mode of using the well and the trials which have been made with it, to be printed and circulated to District Officers, with a view to one at least with complete apparatus being obtained by the District Committee in all districts where the average depth of water from the surface does not exceed 30 feet. The wells might be lent to any persons purposing to sink a well for irrigation or other purposes, to test the quality of the water before the well is sunk. Mr. Egerton thinks this is the best use to which the tube wells can be applied.

From C. M. Rivaz, Esq., Officiating Under Secretary to Government Panjab, to W. M. Young, Esq., Officiating Secretary to Financial Commissioner, Panjab, No. 1784, dated 26th October 1874.

I am directed to acknowledge the receipt of your letter No. 1199, dated the 8th instant, reporting on the experiments made at various places with Norton's tube wells, and to state that the suggestion of the Financial Commissioner expressed in your concluding para is approved by the Lieutenant-Governor.

No. XLVII.—CHOYA DAMS.

From Lieut.-Colonel C. A. McMahon, Offg. Commissioner and Superintendent, Hissar Division, to the Secretary to Government, Panjab, No. 58, dated Hissar, the 21st May 1873.

Clearance of the Choya Nalá.

ON receipt of your No. 216, of the 14th February 1873, I proceeded to the head of the Choya Nalá at Pholad, in the Patiála Territory, where I was met by Muhammad Námdár Khán, Názim of Bhawánigarh, and by Mr. Hammer, Executive Engineer, Special Survey Branch, Western Jumna Canal.

Reason for delay in submission of this report.

2. I have delayed the submission of my report until the present time in order to obtain the evidence of some old Government Officials, now pensioned and scattered over the country, the last and most important of whose depositions only reached me a few days ago.

Position of the Choya Nalá.

3. A reference to the plan marked A. will show that the Choya, known as the Ghaggar *Nalá*, strikes off from the Ghaggar *Náddi*, near the village of Pholad, in the Patiála Territory. After pursuing a sinuous course for a considerable distance, it formerly fell into the Ghaggar below the town of Sirsá, but at present its waters are absorbed long before they reach that point.

Character of the Choya.

4. Throughout the upper portion of its course the Choya is a natural stream, and is supposed by some to be the old bed of the Sursúti, which now falls into the Ghaggar about 16 miles, as the crow flies, above Pholad. The lower portion of the Choya is said to have been either excavated or improved by the Muhammadans in the time of Fíroz Sháh. The improbability of the Choya having, in its upper course, owed its origin to the hand of man, will be sufficiently evident on an inspection of Plan A. annexed, which exhibits some of its most prominent sinuosities.

Absence of spoil banks.

5. I failed also to detect the presence of spoil banks, of which there would probably have been some trace, were it not a natural channel.

Reasons why the Zemindars of Patiála object to the clearance.

6. The bed of the Choya at itsmouth is $6\frac{1}{2}$ feet above the bed of the Ghaggar.* It is ordinarily dry, but, during seasons of high flood, a larger volume of water is poured out of the Ghaggar in the general direction of the Choya than that stream can carry, and the result is the general flooding of the country on both sides of its banks. This flooding, which only lasts a few days, is highly prized by the riparian land-owners, and the Zemindárs of the Patiála State object to any measure being adopted which, in their opinion, is likely to interfere with the extent and duration of these fertilizing floods. The object of each Zemindár in British Territory, on the other hand, is to get a large volume of water as rapidly as possible down the stream, in order that the floods of the Choya may be increased at the point where the stream passes his village.

* See Plans B. and C. Mr. Hammer writes :—"The actual difference at the point mentioned is 7·30 feet. Neglecting local hollows or banks in the bed, *i. e.*, taking the mean slope of either stream, the bed of the Choya at the mouth may be taken at 6·50 feet above the adjoining bed of the Ghaggar."

Arguments advanced by the British and Patiála Zemindárs as to the cause of the short supply of water in the Choya.

7. The Zemindárs of British villages believe that the Choya brings down less water now than it did in former times, and they attribute this fact to the silting up of the mouth of the stream; whilst, on the other hand, the Patiála authorities, with some show of reason, argue that the diminished supply is more immediately caused by the removal of a bund which, it is alleged, formerly existed on the Ghaggar Naddi, a couple of miles or so below the mouth of the Choya, the effect of which was to throw more water into the Choya than would have found its way there had the Ghaggar been left, as now, to pursue its course unchecked.

The several points to be determined.

8. The object of my inquiry has been to determine—

I.—Whether the mouth of the Choya is filled with silt ?

II.—Whether the bed of the Choya has silted up throughout its upper course ?

III.—Whether periodical clearances of silt have been made in former years ?

IV.—Whether clearing out the mouth of the Choya would yield any material result ?

V.—Whether the excavation of the bed from the mouth of the Choya down to the Dhársul Bridge would, to any great extent, increase the discharge of water at the latter point ?

VI.—Whether any other projects for the improvement of the Choya have been proposed in former years ?

VII.—Whether the riparian proprietors in British Territory have just and equitable right to demand the clearance of the bed of the stream in Patiála Territory ?

Results of the inquiry.

9. I now proceed to give, as briefly as possible, the results of my inquiry under each of the above heads.

I.—Whether the mouth of the Choya is filled with silt ?

The mouth of the Choya is not blocked up with silt.

10. An inspection of the Choya, in company with Mr. Hammer, showed that its mouth is *not* blocked up with silt.

A description of the Gaggar.

11. The Ghaggar at the point of bifurcation runs in a well-defined channel; its bed is narrow but deep, and its banks are high and sharply cut. Its stream is strictly confined to its bed, except when in seasons of flood it overtops its banks and spreads over the grass lands on either side.

Description of the Choya at its head.

12. The Choya strikes off at a right angle from the Ghaggar about 6½ feet above the level of the bed of the latter, and its banks are, like its parent stream, sharp and well-defined.

Substance found by digging at the bottom of the Choya.

13. The bottom of the Choya along its upper course consists of pure clay. Just at the mouth there is a patch of silt about ten yards long, which would offer no material obstruction to the entrance of water. I dug through this patch of silt at its deepest point, and reached pure clay two feet below the surface. I walked along the bed for a considerable distance, and found that it everywhere consisted of clay.* There was no trace of silt. The clay in drying had split into deep cracks and on digging here and there to some depth, it came away in solid lumps and

* Here and there where footpaths cross the stream rain water has brought earthy matter down these paths and deposited it in the bed of the Nalá, forming a small bar here and there.

flakes. Mr. Hammer, who has had experience in these matters, was quite satisfied that the substance we dug from the bed and handled was clay. I rode into the bed of the Choya at several other places, and found that it maintained the same character throughout the Patiála Territory.

Neither the mouth nor the bed of the Choya is filled with silt.

14. The conclusion at which we arrived from our observations on the spot was that, with the exception of the small patch of silt above alluded to, neither the mouth nor the bed of the Choya is filled with silt.

The sandy particles brought down by the Ghaggar fall to the bottom of that stream.

15. The sandy particles brought down by the Ghaggar naturally, by reason of their greater specific gravity, fall to the bottom of that stream, and are evidently swept past the mouth of the Choya, which draws off the comparatively pure water near the surface.

II.—Has the bed of the Choya silted up throughout its upper course?

Captain Baker's Report of 1841.

16. This inquiry has already been partially answered under the first head. Captain Baker's Report on the Choya, written in 1841, furnishes data from which a further reply to this query can be obtained.

Mr. Hammer's calculation regarding the flood discharge at the Dhársûl bridge.

17. Mr. Hammer in a Report "on the feasibility of constructing storage works," dated July 1872, now before me, states as the result of his calculations (which he gives in detail), that the flood discharge at the Dhársûl bridge, 153,000 feet below the head of the Choya, does not at present "materially differ from that given by Captain Baker" in 1841.

Present discharge at the Dhársúl bridge at maximum floods.

18. The *present* discharge at this point at maximum floods is 472 cubic feet per second, whilst it was, according to Captain Baker's calculation in 1840-41, 444 cubic feet per second.

Result of the above calculations.

19. It follows from the above that neither the bed nor the mouth of the Choya can have silted up to any great extent since 1840.

III.—Whether any periodical clearances of silt have been made in former years?

Evidence of witnesses taken by Commissioner.

20. A brief abstract of the evidence of the men who gave evidence before me, is annexed. It may be still more briefly summarized as follows:—

Evidence of the Patiála Zemindárs.

21. The Zemindárs belonging to the Patiála State, with one exception, all declared that the mouth of the Choya has never been cleared. One man admitted that a *partial* clearance was effected on one occasion about 16 years ago.

Evidence of Zemindárs of British Territory.

22. A number of witnesses residing in British Territory on or adjoining to the Choya* were examined by Colonel Forster, Deputy Commissioner, in August 1871.† They said that the territory belonged to the Máharája of Patiála until A. D.

* The mere fact that a witness does not *reside* on the Choya is in itself no guarantee that he is not interested in the result of the inquiry, as many men residing in distant villages own *land* on the Choya, and cultivate through tenants.

† The Deputy Commissioner, in para 5 of his No. 255 of 7th September 1871, states that "periodical clearances having ceased since 1857, the channel naturally got blocked up in course of time. It is stated, however, that another channel has been since formed at a spot lower down by the force of the main stream when in full flood." I could gain no tidings such new head when on the spot, nor could the Deputy Commissioner indicate where it was to be found.

1837, and up to that date the channel was cleared out annually; that between 1837 and 1853 A. D. it was cleared out by the British authorities *four* times. The evidence given before me by witnesses belonging to British villages watered by the Choya was to the effect that the channel has been cleared out on two or three occasions,—once in the time of Máharája Karm Singh, and once or twice under the British Government, the *last* occasion being about 28 or 30 years ago, when Mirza Sháhbáz Beg was Deputy Collector. Witnesses belonging to villages *not* watered by the Choya, on the other hand, could not call to memory a single instance of the mouth or bed of the Choya having been cleared out.

Evidence of Government Officials formerly attached to the Fattehábád Tahsíl.

23. Most of the witnesses who belonged to villages on the Choya alleged that the clearances made under British rule were effected by officials attached to the Fattehábád Tahsil, and particularized Parkash Rai, Táhsíldár, and Mirza Sháhbaz Beg, late Deputy Collector, as those through whose agency, or by whose orders, the work had been done. I took therefore the evidence (a translation of which is annexed) of all the old Officials of this Pargannah now alive. Their evidence may be summarized as follows :—

Ahmad Nabí Khán, late Naib Tahsíldár of Fattehábád.

24. *Ahmad Nabí Khán* was Naib Tahsíldár of Fattehábád for six years from 1843 to 1848, and again at a subsequent period for three years. He alleges that the mouth of the Choya was cleared out year by year through the agency of the Tahsíl Jamádár and Chaprásies, who collected Zemindárs for the purpose.

Muhammad Najaf Khán, late Tahsíldár of Fattehábád.

25. *Muhammad Najaf Khán,* now Extra Assistant Commissioner of Gurgáon, was twice Tahsíldár of Fattehábád. He says that the channel was not cleared out in his time.

Hargúlál, late Wásil Báqi Navís of Fattehábád.

26. *Hargúlál* was Wásil Báki Navís of Fattehábád from 1844 till 1871. He remembers that the Choya was cleared out by Parkash Rai, Tahsíldár, in 1844-45.

Nabí Baksh, late Tahsíldár and Thanadár of Fattehábad.

27. *Nabí Baksh,* Inspector of Police, Hissár, was Tahsíldár and Thanadár of Fattehábád for various periods between 1850 and 1858. He states that the Choya was not cleared out in his time, but he remembers that the *mouth* of the Choya was cleared out under the supervision of Mirza Sháhbáz Beg. The channel itself was never cleared.

Gobind Lál, late Kánúngo of Barwála.

28. *Gobind Lál* was Kánúngo of Barwála from 1852 to 1858. During this period the Choya was not cleared out, but in 1845 he used to live with his father, who was Kánúngo of Fattehábád, and he remembers well that Parkash Rai, Tahsíldár, and Mirza Sháhbáz Beg, Deputy Collector, caused the mouth of the Choya to be cleared out. The channel below the mouth was never cleared.

Hakumat Rai, late employé Fattehábád Tahsíl.

29. *Hakumat Rai* was employed in the Fattehábád Tahsíl for five years from 1844. He heard that the mouth of the Choya was partially cleared out by Mirza Sháhbáz Beg.

Parkash Rai, late Tahsíldár of Fattehábad.

30. *Parkash Rai,* who was Tahsíldár of Fattehábád for five years from July 1844, and through whose agency the mouth of the Choya is said by the previous witnesses to have been cleared out, has no recollection of ever having done so and has no knowledge of Zemindárs ever having performed the work.

Mirza Sháhbaz Beg, late Deputy Collector, Hissár.

31. *Mirza Sháhbaz Beg*, too, the late Deputy Collector, who is said by so many to have ordered the clearances to be made, states that a scheme for clearing out and enlarging the mouth of the Choya was discussed and agreed to in 1843-44, but the proposed project was not carried out, and the subject was never revived.

Commissioner's conclusion after a careful consideration of the parole evidence.

32. The conclusion at which I have arrived from a careful consideration of the parole evidence is, that it does not afford satisfactory ground for believing that the mouth of the Choya was ever cleared out under the direction of British Officials. That a body of British Zemindárs may have gone on one or two occasions, on their own motion, to see what they could do towards digging out the mouth, is possible; but there is no ground for believing that they were ever allowed to make any considerable excavation.

Two Rubkáris written by Mirza Sháhbáz Beg.

33. I now pass on to consider two Rubkárís (translations of which are annexed) written by Mirza Sháhbáz Beg in March and April 1844, which, after diligent search, is all the documentary evidence I have been able to collect. These Rubkárís show that in 1843-44 efforts were made to effect the clearance of the Choya, but the Maharája objected and "expressed doubts as to the silted condition of the channel."

Mirza Sháhbáz Beg's views regarding the condition of the Choya in 1843-44.

34. Because the bed of the Choya at its mouth was according to Mirza Sháhbáz Beg's calculation (*vide* Rubkárí), $8\frac{1}{2}$* feet above the bed of the Ghaggar, he considered this fact to be conclusive evidence of the Choya having silted up $8\frac{1}{2}$ feet. There is no ground, however, for believing that the mouth of the Choya was ever lower than it is now. This will appear if we consider how the Choya may have been first formed. Flood water, overtopping the banks of the Ghaggar, flowed, we may imagine, into the natural depressions of the surface of the country, and cut a bed for itself where its velocity was greatest. The deepening of the channel thus formed, especially backwards towards the Ghaggar, would go on until the slope of the bed became so small, and the bottom current consequently so slow, that the natural tendency of the stream to deposit earthy matter in suspension in it, would counterbalance the natural tendency of running water to deepen its bed. As soon as this equilibrium was reached, erosion would cease.

What the circumstances of the Choya requires.

35. The circumstances of the Choya seem to require that its mouth should be at an elevation above the bed of the Ghaggar. Before visiting the Choya, it was suggested to me that a cut should be made from Station X on the *Ghaggar* (see Plan A.) to Station XII on the *Choya*. But what are the facts? The bed of the Ghaggar at Station X is 8 feet *below* the bed of the Choya at Station XII. In order then to carry flood water from the Ghaggar to the Choya, at the points indicated, it would be necessary to artificially reproduce the very state of things that Mirza Sháhbáz Beg attributed, in the case of the Choya, to the deposit of silt, *viz.*, to make the bed of the new cut at its mouth about 12 feet above the bed of the Ghaggar, so as to get a fall from the Ghaggar to the Choya.

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* Scientific measurement shows that it is now, 30 years after Mirza Sháhbáz Beg made his measurement, about $6\frac{1}{2}$ feet above the bed of the Ghaggar. It does not follow from this that the bed of Choya is really lower than it was 30 years ago. Mirza Sháhbáz Beg's calculation may have been rough, or there may have been at the time a local hole in the bed of the Ghaggar, opposite the mouth of the Choya, which has since filled up. It is not probable that the [illegible] level of either bed. (See note to para 6.)

36. The Mirza, however, considering the elevation of the head of the Choya as conclusive evidence that the channel was blocked up with silt, proposed that it should be excavated to the depth of 8½ feet for a distance of 200 yards from the mouth. Had Mirza Sháhbáz Beg's proposal been carried out, the only result would have been to have substituted a pool of stagnant water for hard clay. As water will not flow up hill, the lowering of the bed of the Choya at its mouth would not have added a single drop to the supply of water delivered by the Choya to British villages.

Mirza Sháhbáz Beg's proposal in 1844.

37. The mean level of the bed of the Ghaggar (see longitudinal Section B.) at the mouth of the Choya is 721·50 above the mean sea level, whilst at point No. XII of Plan A. (distant about 6 miles as the crow flies, and about 12 miles by stream from the mouth of the Choya), the mean level is 722 feet, or ½ a foot *higher* than the mean level of the bed of the Ghaggar at the mouth of the Choya!

Mean level of the bed of the Ghaggar.

38. The mean slope of the Choya between its mouth and the bridge at Dhársúl (as far down as Station Nos. XXX and XXXI of Plan A.) is only 1 in 10,000 feet. Were the bed to be reduced all the way from the mouth of the Choya to the Dhársúl bridge, so as to bring the former to a level with the bed of the Ghaggar, the effect would be to bring the slope of the bed to something very near a dead level. And as the velocity of a stream depends on the mean slope of its bed, the actual discharge at the Dhársúl bridge during a flood would not be greater, after the costly excavation above supposed, than it is present. Mirza Sháhbáz Beg's plan of reducing the level of the mouth of the Choya 8½ feet for 200 yards, would have had no effect whatever.

Result of reducing the bed of the Choya from the mouth to the Dhársúl bridge.

39. This brings me to the fourth and fifth heads of the inquiry, *viz.*, (IV) *Whether clearing out the mouth of the Choya would yield any material results*, and (V) *whether an excavation from the mouth of the Choya down to the Dhársúl bridge would materially increase the discharge of water at this point.*

Fourth and fifth heads of the inquiry.

40. The fourth head has already been sufficiently discussed in considering the character of Mirza Sháhbáz Beg's proposal.

Fourth head.

41. With reference to the fifth head, I inquired from Mr. Hammer what would be the result in the discharge if the present bed of the Choya were deepened 3 feet at the mouth, and the channel excavated at a uniform slope coinciding with the present bed level at the Dhársúl bridge? The lower red ink line in plan C. indicates the extent of the uniform excavation proposed in the above question. The Dhársúl bridge is taken because the level of the flooring of the bridge is a fixed point which cannot be got rid of unless a scheme for the improvement of the Choya makes provision for a new bridge. The result of Mr. Hammer's calculation is that the extensive excavation proposed would only give an increased discharge of 36 cubic feet of water per second, which would be hardly worth having. Mr. Hammer was of opinion that he had taken too large a co-efficient, and that consequently the above result was in excess of the truth. I have shown his calculations to Colonel Fulton, Superintending Engineer, Western Jumna Canal, and he is of the same opinion. Mr. Hammer took 90 as his co-efficient, whereas Colonel Fulton considers that 76 would be the correct figure for the Choya. Were 76 taken as the co-efficient, the increased discharge given above would be reduced to next to nothing. In other words, owing to the mean slope of the bed of the Choya being only 1 in 10,000, the uniform deepening of the bed from the mouth to the Dhársúl bridge would yield no return for the money expended on the work.

Fifth head.

42. I pass on to consider, in the next place, the sixth head of the inquiry, *viz., the history of former projects for the improvement of the Choya.*

Sixth head of the inquiry.

43. The idea of improving the Choya appears to have been first entertained in the year 1836. Colonel Colvin, who was consulted on the subject,* thought that advantage might possibly be derived during the rainy season, by clearing out the Choya from Phúlad to Futtehábád: by cutting through bars in its bed and by "drawing out the flood water through side cuts, so as to flood the neighbouring low lands." In consequence of Colonel Colvin's report, the Government of the North-Western Provinces appointed Captain Wakefield in 1837 to prepare plans and estimates. The first plan and estimate furnished relate to a cut from the Ghaggar so far down the stream as to be out of the Hissár District altogether. "The 2nd estimate amounting to Rs. 15,602-10-4 was for a cut near Natwan to the Choya near Sakmalpúr, with the apparent object of replenishing the latter channel below the point where its waters were principally drawn off. Neither of these projects was approved by the Superintending Engineer or Military Board, who were not satisfied that water was available to supply the proposed canal, or that any advantage commensurate with the large outlay could be reasonably expected from them."

History of former projects for the improvement of the Choya.

44. The following rough sketch shows the position of Captain Wakefield's proposed 2nd cut as compared with the one called the Rangoi actually made in 1865-66, to be noted further on.

Captain Wakefield's proposed cut.

45. On the 27th March 1840, Colonel Cheape, then Superintending Engineer, inspected the Ghaggar and prepared a report "which, after enumerating several objections to the excavation of Captain Wakefield's project, he stated his opinion that the most economical system, as well as the best adapted to the nature of the stream, would be, 1st, a masonry dam or weir across the Ghaggar near Phúlad, and immediately below the head of the Choya branch."

Colonel Cheape's Report.

46. In September 1841, Captain Baker proposed, 1st, the construction of a masonry regulating dam across the Ghaggar and Choya at the point of their separation; 2ndly, a rectification of the Choya channel.

Captain Baker's proposals.

47. The following rough sketch will sufficiently explain the position of the regulators proposed by Captain Baker.

Position of the regulators proposed by Captain Baker.

ab. bc. proposed masonry regulators.

ef. present head of Choya.

bd. new head proposed by Captain Baker.

48. The rectification of the Choya channel proposed, consisted partly in clearing the old channel, and partly in cutting off the heads in the manner indicated in the margin by red ink lines, by which the length of the upper section of the channel would have been reduced from 18·3 to 9·72 miles, and the fall or slope increased (according to Captain Baker's calculation) from 4 to 8 inches in the mile.

Rectification of the Choya channel proposed.

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* The summary given in paras 43 to 52 is condensed from Report of Captain Baker, Superintendent, Western Jumna Canal, to Superintending Engineer, under date 17th September 1841.

49. "The fall of the Choya Nála," wrote Captain Baker, "for distance below its point of separation from the Ghaggar, is in a great measure dissipated in a series of tortuous windings, which nearly double the length of its course. The want of fall thus caused affects the indraught of the Choya both by retarding its current and by choking up its head with silt brought down by the river, but speedily dropped in the comparative still water of the Nála." [This remark does not, I think, give the result of actual observation, but merely indicates how Captain Baker thought the Choya would behave. Could Captain Baker have fallen into the same error as Mirza Sháhbáz Beg?] "It is evident, therefore, that a mere clearance of the channel, however complete at first, would merely have a temporary effect, as the slackness of the current would again cause the rapid formation of silt deposits; and that lasting benefit would only be expected from the increase of fall attainable by cutting off the most circuitous bends, and thus shortening the Nála's course. An actual saving of excavation also will be effected by many of the cuts."

Extract from Captain Baker's Report.

50. The Superintending Engineer, North-Western Provinces, in commenting on Captain Baker's report, doubted whether the supply of water in the Ghaggar would be more than sufficient to meet the demand of villages on the main stream.

Opinion of the Superintending Engineer, North-Western provinces, on Captain Baker's Report.

51. "Under the above view of the case," he wrote, "I cannot recommend the establishment of a band at Phúlad, as proposed in the report, until the sufficiency of the supply is fully established; and this could only be done by deputing an Officer to make observations during the rainy season. He might be very usefully employed also in correcting the bed of the Choya by straightening its course and reducing the slope to one uniform grade; also in disposing of the present supply to the utmost advantage by erecting dams at favorable spots, and by opening side cuts wherever practicable, all of which should be done in communication with the local authority."

Extract from the above.

52. A letter from the Military Board winds up the correspondence. The Board considered Captain Baker's report "to be very useful on some future occasion, but * * * they feared that at present it will not be practicable to follow up the investigation, or to execute any portion of the proposed works." And then the matter seems to have rested.*

Opinion of the Military Board.

53. The above extracts, which embrace the period of 1836 to 1842, throw some light on the present inquiry. They bear out what I have already pointed out, *viz.*, that no improvement is to be hoped for by deepening the existing head of the Choya, and they show that the only real remedy is to increase the slope by cutting off the bends in the channel, and by the erection of a regulating dam in the Ghaggar.

The above extracts bear out Commissioner's opinion.

54. I think further that had it been a recognized custom in 1836 for the riparian zamindárs to effect periodical clearances in the bed of the Choya, the several officers who visited the spot could, each and all, hardly have failed to notice the fact in their reports to Government.

Had clearances been effected in 1836, the fact would have been noticed by the officers.

* I omit mention of an old scheme, recently received in connection with the project of storage works, for turning the surplus water of the Western Jumna Canal into the Choya during the rains, as this scheme has no direct bearing on the present inquiry.

Rangoi cut.

55. Before leaving this branch of the subject, I note in passing that in 1865 and 1866, the Rangoi cut (shown in Plan A.) was made from the Ghaggar to the Choya by the District Authorities; the money required for the purpose having been contributed by the zamindárs interested. There were traces of an old Nála called the Rangoi in existence, but as this followed the low drainage line of the country, the new channel was taken along a new line. The extent to which the Deputy Commissioner expected the Rangoi to irrigate the Choya villages, may be seen by a glance at Plan D. annexed. These expectations have, I believe, only been partially realized. It is possible, however, that the existing defects may be remedied, and some two months back I addressed Colonel Fulton, Superintending Engineer, Western Jumna Canal, on the subject. The Rangoi ought to be surveyed and reported on by a competent Engineer. If His Honor the Lieutenant-Governor is of the same opinion, I trust that the necessary instructions to the Secretary, Government, Department Public Works, Irrigation Branch, may be issued.

The last head of the inquiry.

56. I now pass on to consider the last head of the inquiry, *viz., whether in the event of the Choya silting up at some future time, the British riparian proprietors have a just and equitable right to demand the execution of the necessary clearance in the Patiála Territory.*

The bed of the Choya will, in all probablity, not silt up for a long time to come.

57. As the result of my inquiry has been to show that the bed of the Choya has not been raised during the past 35 years to any material extent, the natural inference is that there is not much fear of its silting up for a long time to come. Whilst, therefore, I do not think the point is of immediate practical importance, at the same time, as the question has been raised in the course of this inquiry, I think it undesirable to let the discussion drop without Government asserting the right to insist on the clearance of the channel, should it silt up in future years to such an extent, and in such a manner, as to cut off from British villages the advantages they now enjoy. The Choya has been surveyed along its upper course, and should any material change in the level of its bed take place in future years, the fact could be clearly demonstrated.

Equal right of all proprietors to use the water of rivers.

58. "Rivers," writes Domat (Tome II., Book I., Section I), "are for the common use of all persons." Riparian proprietors down the stream have as much right to use and enjoy the water flowing in a natural channel as those who reside near its head. The right to enjoy the water carries with it the further right to remove any obstacle of recent growth which obstructs that enjoyment. All that any riparian proprietor can fairly claim is to be continued in the enjoyment of his accustomed privileges.

Extract from Domat's Work.

59. "Seeing," writes Domat, "the use of rivers belongs to the public, nobody can make any change in them that may be of prejudice to the said use. Thus, one cannot do any thing to make the current of the water slower, or more rapid, should this change be any way prejudicial to the public or to particular persons. Thus, he who should have an estate divided by the stream of the water, or have separate estates lying on the two banks of the river, could not, for his own convenience, make a bridge to join his two estates together. Thus, although one may divert the water of a brook, or of a river to water his meadows, or other grounds, or for mills or other uses; yet, every one ought to use this liberty so as not to do any prejudice either to the navigation of the river, whose waters he should turn aside, or the navigation of another river which the said water should render navigable by discharging itself into it, or to any other public use, or to neighbours who should have a like want and an equal right. And if there were not water enough for them all, or that the use which some of them made of it were prejudicial to others, a proper remedy would be applied, according to the occasion, by the Officers whose business it is to redress such abuses."

Right of riparian proprietors to remove silt.

60. When then the deposit of silt in a natural channel deprives the riparian proprietors down stream of their accustomed supply of water, or materially diminishes that supply, I think it is in accordance with the first principle of natural justice and equity, that they should be entitled to remove the silt so deposited, and restore all parties to the enjoyment of their rights. The riparian proprietors near the mouth of the stream could no more, in natural justice and equity, claim the right to resist the removal of the silt than they could claim the right to erect a masonry dam across the stream.

The fact that a part of the Choya is in Patiála Territory does not affect the general principle.

61. If the Choya existed throughout its length in British Territory, the truth and justice of the principle laid down above would not, I think, be disputed. And if this be so, why should the case be different because one portion of the stream is in Foreign Territory? The principle is not on arbitrary rule of English law, but is one of natural justice and equity, the truth of which ought to be acknowledged by all nations. If the whole of the Choya were in Patiála Territory, would the Mahárája act upon any other principle? Would he regard the silting up of the Choya as an act of God, and allow the process to go on unchecked until the stream became useless to every body?

Gist of the objections raised by the Mahárája Patiála.

62. The whole gist of the objections raised by the Mahárája of Patiála is contained in the following extract from the translation of the Mahárája's communication to the Secretary, Government, Panjab, contained in your office file herewith returned, *viz.*, "The proposal under discussion is virtually similar to that of erection of dams; the object being to divert by artificial means (in the present case by excavation) the natural course of the stream."

Doctrine of prescription.

63. The comparison drawn by the Maháraja would be sound, were the dams alluded to of recent erection. From the general principle relied on in the foregoing pages, it follows that no individual, or body of men, have the right to divert the water of a river to their own use by the erection of a new *band*, to the detriment of the riparian land-owners down stream, without the sanction, express or implied, of all the riparian proprietors enjoying the use of the water. Into the general doctrine of prescription, I need not enter, but suffice to say that it is not merely a doctrine of English law, but it is also a principle of natural justice and equity, that rights may be lost as well as gained by prescription. The right to receive running water in its accustomed course without let or hindrance is called a natural easement. It is thus described by the American Jurist, Story. "*Primâ facie* every proprietor upon each bank of a river is entitled to the land covered with water in front of his bank, to the middle of the stream. In virtue of this ownership, he has a right to the use of the water flowing over it in its natural channel *without diminution* or *obstruction*. But, strictly speaking, he has no property in the water itself, but a simple use of it while it passes along. The consequence of this principle is that no proprietor has a right to use the water to the prejudice of another." * * "But of a thing common by nature, there may be an appropriation by general consent or grant. * * Our law awards to the riparian proprietors the right to the use in common, as an incident of the land: and whoever seeks to found an exclusive use, must establish a rightful appropriation in some manner known and admitted by the law. Now this may be either by a grant from all the proprietors, whose interests are affected by the particular appropriation, or by a long exclusive enjoyment without interruption, which affords a just presumption of right."

Sursutí dams.

64. The correspondence regarding the Sursutí dams is not before me, but I presume that the continuance of the dams would not have been sanctioned by Government, had the villages

concerned not have acquired the right to those dams by prescriptive right; or, in other words, had the use of the water of the Sursutí in that particular way not been enjoyed for so long a period by the villages in question, that the original acquiescence of all the riparian proprietors interested may be safely presumed.

The Sursutí dams have no real connection with the present inquiry.

65. The Sursutí dams, therefore, have no real connection with the subject of the present inquiry. Each case must be tried on its own merits and judged by itself.

Commissioner's contention in the case of the Choya.

66. In the case of the Choya, my contention is simply this that in *future*, in the improbable contingency of the mouth or bed of the stream silting up and depriving the riparian proprietors down stream of the supply of water which they now enjoy, the proprietors up stream have no just or equitable right to resist the removal of the obstruction. Prescription cannot be pleaded against me, because I am supposing the case of a future event—an obstruction which, at the time of its being objected to, would, I assume for the sake of argument, be of recent origin.

Comparison between the Choya Nalá and the Hansí Canal.

67. The Hansí branch of the Western Jumna Canal, which, by the way there is reason to believe, is the ancient *Chitang*, and may therefore be justly compared with the Choya, has silted up its bed throughout its course. This state of things, I am told, greatly benefits the Jhínd State, through which the Canal flows for many miles; for, owing to the rise in the level of its bed, water is thrown into Jhínd at a higher level than will be the case when the silt is removed. Jhínd, I understand, is anxious that the necessary clearances should not be effected. Will Jhínd, I may ask, be allowed to plead that the silting up of the Canal—the old Chitang, is owing to the act of God, and the British Government have no right to remove the silt so deposited? Even supposing the Canal had never been cleared out on any former occasion, would the Rája be allowed to stop the clearance? If not, wherein lies the difference between the case of the Western Jumna Canal and the Choya?

Remarks regarding the principle relied on by the Mahárája of Patiála.

68. Moreover, I remark, that if the Mahárája of Patiála were allowed to resist the clearing out of the Choya in its upper course, in the supposed event of its silting up at a future period, he would be equally entitled, on the principle he relies on, to protest against the clearance of the bed lower down the channel; for the accumulation of silt there would, to some extent, operate as a dam and raise the level of the flood line higher up stream, and thereby benefit his villages. The Mahárája's principle, in fact, requires the entire abandonment of the Choya and Ghaggar to nature.

Compromise with the Patiála authorities.

69. In conclusion, I have the honor to state that I have made no attempt to effect a compromise with the Patiála officials. According to the view I take of the case, no compromise is necessary, for no immediate clearance of the Choya is required. However, I gathered from Muhammad Namdar Khán, Názim, that the compensation the Mahárája desires as the price of any concession he might make, is either a grant of British villages, or the destruction of the *bands* on the Sursutí. The former is contrary to the policy of Government, and the latter I could not recommend in the present state of my information regarding the Sursutí dams. If the Sursutí villages concerned have acquired rights by prescription, I do not see why they should be deprived of those rights—supposing a legal power so to deprive them be vested in Government in order that the position of other villages on the Choya should be improved.

From Colonel J. Crofton, R. E., Joint-Secretary to Government, Panjab, P. W. D., Irrigation Works, to the Secretary to Government, Panjab, Civil Department, No. 2894I., dated Lahore, the 16th July 1873.

I HAVE the honor to acknowledge the receipt of your letter No. 793, dated 9th June 1873, forwarding a report by Lieutenant-Colonel McMahon, Commissioner of Hissár, on the dispute regarding the clearance of the Ghaggar Nullah, locally known as the Choya.

The enquiry seems to have been very thoroughly made, except in one or two particulars to be noted hereafter, and all the facts elicited as far as is possible in the absence of records, and considering the length of time in which the dispute appears to have been pending.

Heads of enquiry.

2. The investigation was divided by Colonel McMahon into seven heads; the main points being whether the channel is silted up, and whether any clearance of silt were made in former years.

Probability of channel having silted.

3. On the first two heads, *viz.*, whether the mouth of the Choya is filled with silt, and whether the bed is silted in the upper part of its course, the conclusion arrived at is, that it has not silted to any material degree. This is based mainly on the fact that the soil of the bed generally is *clay*.

From his 15th para. Colonel McMahon appears to consider that silt must be composed of sandy particles or pure sand. This, however, is by no means generally the case, especially in streams where the current velocity is slow, as it is in this locality in the Ghaggar; and the fact mentioned in the 13th para. of the clay in drying having split into deep fissures, seems to indicate that this clay *is* a deposit from the river floods. This cracking of the deposit when drying, unless it be almost pure sand, occurs everywhere, notably along the Indus in the lower portion of its course through the Panjab.

It is not mentioned to what depth the excavations (para. 13) were carried, but to decide satisfactorily whether this clay was deposit or not, the boring should have been carried down (judging from the levels of the bed) some 10 or 12 feet, and excavations should also have been made in the ground adjoining the channel.

In the Settlement Report of 1840, alluded to in the correspondence, it is stated that the "duher" or meadow lands along the Choya were very fertile, owing to the rich deposit from the Ghaggar water. And in Captain (now Major-General) Baker's Report of 1841, it is mentioned that an old bridge over the Choya near Zufferabad, about half way between the head and termination of the Nullah, was silted up to the crown of the arches, but that formerly it was said a man on horseback could pass under it.

Has it silted since 1842.

4. That the channel *has* silted up then is, I think, evident, but the question now is what silting has taken place since the villages at the head were transferred to Patiála, which, as I stated in a former Memo., could not have occurred before 1842, as a letter, dated 20th October 1841, from the Secretary to Government, North-Western Provinces, is on record, in which the transfer is alluded to as *under contemplation.*

Deposit extends far below the head.

5. I should mention here that the deposit in a case of this kind, where the velocity of the current in the main stream is so small, would extend much further from the actual head of the side channel, than when the velocities of current are high, as in the upper portion of the Ghaggar's course near the hills, and consequently carry heavier silt in suspension.

6. Captain Baker's investigation took place in 1841, and the land below the mouth of the Choya, which the Patiála people stated to Colonel McMahon (*vide* page 7), formerly existed there, must have been removed some time before as Captain Baker does not mention it. Such was the silted state of the channel however at that time, that a permanent dam across the Ghaggar and a clearance of the channel not only at the head, but throughout its course, were considered absolutely necessary, to ensure the passage of the water into the Choya, when any did come down the Ghaggar.

Measures considered necessary in 1841.

7. The clearance of the bed for 200 yards from the mouth proposed by the Deputy Collector, Mirza Sháhbàz Beg, in 1844, (*vide* para. 36) would, the levels clearly shew, have been labor thrown away; to be of use, it must have extended much further.

Deputy Collector's proposal in 1844 useless.

8. Whether the bed has been further raised by deposit since Baker's investigation, it is no easy matter to decide with any measure of certainty, as unfortunately any level marks made at that time have long since been obliterated, yet a comparison as far as can now be made of the levels of the beds leads me to believe that the Choya for some miles at least from its head *has* been raised some 3 or 4 feet at least.

Has channel silted since 1841.

The total fall between the bed of the Ghaggar at the head of the Choya and the bed of the latter at the old bridge near Zutferábád mentioned above, was, according to Baker's levels, 29 feet. From the levels lately taken the heights above mean sea level of these two points are—

Bed of Ghaggar	716·90
Do. Choya	686·68
Total fall ...	30·22

Or a difference of only 2 feet.

This seems to prove that the bed of the main Ghaggar has not altered much, as the level of the silted up bed at the old bridge is necessarily much the same as it was.

Again the floor of the dam projected by Captain Baker was on the level of the bed of the main Ghaggar, and the bed of the proposed new Choya channel was commenced from that level, and in the section of that channel the depth of excavation for some distance from the head was $3\frac{1}{4}$ feet.

Now the levels lately taken give the *mean* heights of the beds of the channels at the bifurcation as follows:—

Bed Main Ghaggur	716·90
Do. Choya	726·00
Difference ...	9·10

Colonel McMahon states that Mr. Hammer makes the difference between the *mean* heights $6\frac{1}{2}$ feet; but even with this reduction there is a difference in depth of $3\frac{1}{4}$ feet, which must be due to rising of the bed of the Choya.

9. The comparison of the discharge of the Choya at present with that given in Captain Baker's report, described in paras. 17 and 18, cannot I think be taken as a reliable basis on which to form a conclusion, as to whether the channel has silted or not. Captain Baker's results were obtained by taking the section and *actual* surface velocity at the *head* of the channel; while Mr. Hammer's are based on the section 29 miles below the head, and on velocity *calculated* from the surface slope and section which, in so irregular a channel as this, must at the best give very uncertain results.

Comparison of discharge, no proof.

Evidence against clearance since 1841.

10. On the main point, whether any clearance has been made since the villages at the head were transferred to Patiála, which is discussed under the 3rd head (paras. 20 to 38), I think no other conclusion is possible than that arrived at by Colonel McMahon, *viz.*, that there is no satisfactory proof that a clearance to any material extent was ever effected by the British villages of their own motion or under the direction of British officials. The proposal recorded in the two Rubkarís mentioned in para. 33, I have stated above, could not, if carried out, have been of any practical benefit, and the Mirza's evidence (para. 31) seems to be conclusive that his proposal was *not* carried out.

Extensive clearance and dam in Ghaggar necessary.

11. In fact, to be of any real use, the Choya channel must be cleared for *many miles* from its head, and even then without a band in the Ghaggar it would hardly be worth the cost, as was the opinion when Captain Baker's project was drawn up in 1841. This question is discussed under the 4th and 5th heads in paras. 39 to 41.

Rangoí Canal.

12. The 6th point in the enquiry relating to former projects for improvement of the Choya is discussed in paras. 42 to 55.

The only matter in this on which I need remark is the Rangoí Canal, which Colonel McMahon considers may possibly be improved. In a report lately submitted regarding the possibility of storing water in this region and ultilizing it more economically than at present, a brief description is given of this channel.

The head is on the main Ghaggar about 15 miles below the Choya bifurcation. At this point the bed is 4·72 feet above that of the Ghaggar, 10 feet below the ground surface.

In the first three miles, 1,500 feet, the slope is 1 in 6,857.
In the next four miles, 3,900 feet, the slope is 1 in 12,878.
And in the last four miles, 3,605 feet, it is 1 in 3,786.

Now, as all the water which enters the channel must be either used for irrigation or lost by evaporation and absorption, it is clear that the value of the cut depends on the quantity of water which can be turned in at the head, and here just as in the case of the Choya this cannot be secured without a band in the main Ghaggar, even were the cut deepened, it would very soon silt up again.

Have British villages right to clear the Choya.

13. The general question discussed in para. 56 to the end of the right to clear out a channel, if it is proved to have silted up, touches on points which have formed subjects of dispute for many a long year, in connection with these rivers, for, as observed by the Patiála authorities (para. 62), it is cognate to that of the erection of bands.

Diminution of supply of water probable.

14. In the absence of the recorded facts, I think there can be little doubt that the advance in the value of cultivation has, of late years, led to the subtraction of more water than formerly from the Sursútí and other feeders of the Ghaggar, so that the assertion of the people in the neighbourhood of the Choya, that less water has come down the Ghaggar than formerly is most probably quite correct.

Conclusions.

15. The conclusions then I draw from all the facts that can now be ascertained may be summed up as follows :—

1st.—That the bed of the Choya has silted, not only close to the head but for some distance along its course.

2nd.—That no partial clearance near the head would be of any material benefit.

3rd.—That no such general clearance, as would be really useful, has been made since the village at the head of the Choya were transferred to Patiála.

4th.—That even if a general clearance were effected, the benefit would not last long without the aid of a dam across the Main Ghaggar.

5th.—That the aggregate quantity of water which reaches the head of the Choya in any season is, there is reason to believe, less now than it was formerly.

16. For the future to put an end to all disputes as to the fact of the channel silting higher than it is at present, it would be advisable to establish a permanent level mark, say a bar of good masonry across the bed of the Main Ghaggar at the bifurcation, the level of which should be connected with the general series of levels, which have been most carefully taken within the last two or three years. The site of this bar however would be in the Patiála territory, and it would therefore be necessary to construct it by permission of the Mahárájah, and the Patiála authorities should be responsible for its protection from injury.

Permanent marks advisable.

17. The original enclosures received with your letter under reply, are herewith returned, a copy of Colonel McMahon's report having been taken for record in this Office.

From Colonel J. Crofton, R. E., Chief Engineer, Irrigation Works, Panjab, to the Secretary to Government, Panjab, No. 2928 I., dated Lahore, 19th July 1873.

In continuation of my letter No. 2984 I., dated 16th instant, regarding the dispute as to clearance of the Ghaggar Nala (or Choya) in the Hissár District, I have the honor to forward copies of correspondence as per margin, lately received from the North Western Provinces' Government, from which it may be inferred that objections were made by Patiála so far back as 1844 to any operations on the Choya within their territory.

No. 160, dated 31st October 1844, from Offg. Superintendent, Bhatti Territory, to the Commissioner of Dehli.
Letter dated 27th October 1844, from Joint Magistrate on Special Duty, to Offg. Superintendent, Bhatti Territory.
Letter dated 27th October 1844, from ditto, to the Commissioner of Dehli.
No. 587, from Secretary to the Sudder Board of Revenue, North Western Provinces, to Secretary to Government, North Western Provinces.
No. 315, dated 20th November 1844, fom Commiss'oner of Dehli, to Secretary to Sudder Board of Revenue, North Western Provinces.
No. 1164, dated 20th March 1845, from Secretary to Government, North Western Provinces, to Secretary to Sudder Board of Revenue, North Western Provinces.

2. Mr. Vans Agnew in the letter dated 27th October 1844, recommending the carrying out of Captain Baker's scheme of 1841, and combating the objections subsequently made to it, does not mention any clearance having ever been carried out in the Choya, which it may fairly be presumed he would have done had such ever taken place, when dealing with the subject so comprehensively as in the above letter.

3. In the 5th para Mr. Vans Agnew seems to allude to objections which Patiála might make, if they had not already been made.

4. Some other correspondence accompanied that of which copies are annexed, but as it only refers to the bands on the Ghaggar and its feeders above the Choya bifurcation, I have not forwarded it.

From Major F. Mackeson, Offg. Superintendent, Bhatti Territory, to the Commissioner and Superintendent, Dehli Division, No. 160, dated 31st October 1844.

At the commencement of the flooding of the Ghaggar this year Mr. Agnew finding me prepared to engage in inquiries on the subject, offered me the use of some notes he had been collecting relative to the extent of former inundations. I begged of him as he had already given much attention to the subject to complete his inquiries, and he has now submitted the result in a report to you, which I have much pleasure in forwarding with copy of his letter of the 27th ultimo to my address.

2. My observations of this year's inundation confirms Mr. Agnew's opinion that in high floods there is an excess above the wants of the people, a waste of water flowing in the main channel of the Ghaggar both by its overflowing its banks and by its not subsiding in time to admit of the bed of the Naolí being cultivated for the Rabi. This excess could always be turned to profit if encouraged for the Choya Channel by works to be erected at Phúlad.

3. The only lands that might suffer from the withdrawal of any portion of the supply of water from the main stream of the Ghaggar are the Naolí lands of Rannah, but these are in a condition only to benefit by a very high flood which may occur once in seven or eight years, and I should not put the uncertain returns to be derived from them in completion with the comparatively certain returns that may be expected from irrigation from the Choya branch for which the floods of ordinary years should be sufficient.

From P. A. Vans Agnew, Esquire, Joint Magistrate on Special Duty, to the Offg Superintendent, Bhatti Territory, dated 27th October 1844.

Having now completed the enquiries I have been making, with your concurrence, into the Ghaggar inundations, I submit the result in a report to the Commissioner, which I will thank you to forward with any remarks that you may have to make.

From P. A. Vans Agnew, Esquire, Joint Magistrate on Special Duty, Bhatti Territory, to the Commissioner and Superintendent, Dehli Division, dated Camp Mumbah, Pargannah Wuttoo, 27th October 1844.

When I had the honor to take charge of the office of the Superintendent, Bhattí Territory, in October 1843, I was obliged to state my inability to comply with your requisition for a report on Ghaggar for the year 1842. No registers had been kept, nor observations of the river been recorded relating to that year, and my recent arrival in this part of the country precluded the possibility of my possessing the requisite information. The same facts hold good in relation to the inundation of the year 1843. It is even now impracticable from a total absence of written information to give more than a general character of the Ghaggar irrigation during those years. But having in the meantime collected all information in my power, and enjoying the advantage this season of observing the first high flood which has occurred since the foundation of Sirsa was laid, I am in hopes that I can lay before you some fresh information on the subject, and perhaps obtain your concurrence to the proposition which I shall venture to make.

2. By reference to the "Report on projected Canals in the Dehli Territory," I perceive that the economy of the waters of the Ghaggar "formerly occupied the serious attention of Government, and that the latest information on the subject is contained in Captain Brown's "Report on the Ghaggar and Sursúti Rivers in the District of Hissár," dated the 4th July 1840, and Captain Baker's "Report on the Ghaggar," dated the 17th September 1841, forwarded with letter No. 1685, from the Military Board, of 18th October 1841.

3. The information contained in these papers may be briefly summed up thus, (*a*) that the Ghaggar River is the channel of the drainage of the Sub-Himalayas and the plains at their base from the Jamna to the Satlej; (*b*) that it is not supplied by perennial sources; (*c*) that therefore, its body during the rains must depend solely upon the fall of rain in the above mentioned tract; (*d*) that no apprehension is to be entertained at present of the natural causes of deterioration, which appear to have so much altered the channel and may be supposed still in existence; (*e*) that the system of "Banding" in the Sikh States should be regulated as likely to do much mischief; (*f*) if unchecked, that in order to economize the waters of the Ghaggar, a regulating dam be constructed at Phùlad (the point of separation of the upper and lower branches) which will, by forcing the greater part of the water down the lower stream, insure the irrigation of the most profitable line; (*g*) that the ancient channel be rectified as far as Mulhon; (*h*) the boundary of Fattihábad and Sirsa; (*i*) that the cost of the measures will be at the highest Rs. 34,265 or at the lowest Rs. 24,719 that the estimated returns (taken for experiment in a scanty year), being the amount of increase of land Revenue on the difference of area irrigated will be (*j*) Rs. 24,330 per annum in the Hissár District only; (*k*) that further information is required as to the annual supply of water at Phúlad.

(*a*.) *Vide* Report on, rejected Canals, page 12, line 21, *ad in.*

(*b*.) Page 13, lines 5—16.

(*c*.) Page 8, lines 15—16.

(*d*.) Page 14, lines 19—25.

(*e*.) Page 15, line 36.

(*f*.) Page 23, lines 15—19.

(*g*.) Page 23, lines 20, 21.

(*h*.) Page 27, lines 24—26.

(*i*.) Page 28, line 1—16.

(*j*.) Page 29.

(*k*.) Page 124, lines 1, 2, 32, 33, and 125.

4. On these reports the following observation was made in letter from Secretary to Government, North Western Provinces, dated 20th October 1841, to the address of the Secretary, Sudder Board of Revenue.* "The Board are, however, aware that it is now in contemplation to restore to the Patiála State a great portion of the villages which would be affected by this measure, and amongst them, it is believed the very tract above Phúlad, which would be the site of the proposed embankment. Supposing then that the measure is in every other respect quite advisable, its execution must be postponed till the final adjustment of that long pending dispute."

* Page 2, line 4.

5. This point has been settled. Phúlad and two or three villages in its vicinity including two or three miles of the lower branch or Choya have been given over to Patiála. But assuredly this cannot be an invincible obstacle to the only measure which can ever improve the revenue of the Sotur lands of Hissár and Bhattíana, and which will not interfere in any way with the rights of Patiála should the scheme be worthy of approval. I cannot look upon the possession of Phúlad by a foreign State as a fatal lumine objection.

6. I am well aware that the present are not times to suggest outlay on the part of Government, and have observed the decided opinion expressed by the Military Board in their letter No. 4660, dated 3rd December 1842, to the address of the Hon'ble the Lieutenant-Governor, para. 13 (printed in the recently published Collection of "Documents relating to the Rohilkhund Canals"); that it is the interest of Government to limit its outlay to the Ganges Canal till the returns from that undertaking commence. But the policy of economizing the waters of the Ghaggar may be discussed on very narrow grounds. Let the annual supply of water be great or small, greater or less will still be the profit of Government in the increased area of irrigation on a rectified channel assisted by a weir compared to that on the present unprofitable line taken by the water on the upper branch, and the almost obliterated head nd choked-up channel of the Choya.

7. It is much to be regretted that careful observations were not kept up during the rains on the Ghaggar and Choya, as we should then have had the means of comparing the supply of 1842 and 1843, with that ascertained by Captain Baker in 1840 and 1841. This year has, however, shown as a high flood, and so immense is the difference of supply that it becomes evident Captain Baker's scheme would be inadequate in similar cases, and that he never anticipated having to provide for so great a body of water. In addition to this we can shew that the proportion of high to scanty floods has been as 10 to 12 during the last 22 years, and as taking into consideration the nature of the river we may fairly expect a similar proportion for the future. Captain Baker's plan would appear to require modification.

8. I beg to submit a few remarks on his proposition; 1st, on deflecting the waters of the Ghaggar; 2nd, on the manner in which he recommends so doing.

9. Captain Baker thus most correctly describes* the irrigable land of the upper branch. "The cultivation of the main Ghaggar being confined to the river bed (which is liable to floods till September) no Kharíf crop can be raised; but the Rabí is sown in such lands as have been thoroughly saturated by the rain floods.

* Page 22, line 31.

"The borders of Dhunúr and similar jhíls are ploughed up and sown with grain as the water recedes, but it is said that irrigation from them is prohibited on the somewhat questionable plea that the water is required for drinking purposes. The kúnds are generally useful for irrigation and watering cattle. From this it would appear that a regular small stream is not required in the main Ghaggar, but that a few floods to fill the jhíl and kúnds and saturate all the culturable land in the bed of the river would be sufficient for all useful purposes." Colonel Cheape is (in page 8, line 11) "quoted as insisting that the pastoral habits of the people, and the depth of wells, render it necessary that water for cattle be stored up in the Dhunúr jhíl and in other similar hollows or kúnds, abundantly to be met with in the bed of the Ghaggar." Again, the Officiating Superintending Engineer (in page 125, line 17) writes—"Lieutenant Robinson also assures me that there is never more water than sufficient for the wants of the people naturally poured down the Ghaggar, and (below same page, line 33) again, it is much to be doubted whether the (1693, 621, 440 cubic feet) be sufficient for the demands of the Ghaggar; I mean for the demands which right of long possession has entitled them to." A glance at the accompanying map will shew the correctness of Captain Baker's account. The whole Dhunúr lands in the main branch are 32,400 acres, of which almost all which is not actually in the bed is in our parganahs of Tohana and Rattía in the Hissár District. The idea that any real importance attaches to the jhíls and kúnds for *drinking purposes* either of men or cattle is quite unfounded. Lieutenant Robinson's above quoted assertion was general, and of course given upon his own experience, and as the years of his residence were all of drought, no doubt no person in the district was likely to assert there was no superabundance of water. But I have quoted the above opinions at some length to do away with the impressions of those opposed to Captain Baker's, much good would be done to the cultivators of the bed of the Ghaggar by preventing more water flowing into it than would dry off before the sowing season, and guarding them against late freshes, which in so confined a space, yearly destroy great part of their crops, but which if permitted to lose themselves on the wide meadows of the Choya would do more good than harm. On the main branch a fixed quantum is required, which a few years experience would determine, while too much can never be poured down the Choya as I shall proceed to show.

10. Captain Baker's experiments determining the discharge of the Ghaggar were made during the year 1841 which the accompanying statement* of revenue will prove was a most unfavorable season, only $\frac{1}{6}$th of the

* Appendix C.

† That of 1837. amount collected during the last high floods† was asses-
sed during year. His estimates therefore of the discharge, consequent profits, &c.,
must have been founded on a minimum, not an average year. His very able and
valuable report was further drawn up from observations necessarily made in haste,
and he was unable from press of time to proceed in person to the lower portion of
the river. Hence it is that he appears unconscious that the season of 1842 was a
minimum one, and that the Ghaggar ever reached beyond the Dhunúr jhíl, where-
‡ Appendix B. as the statement‡ will prove it has reached. Bhatnér
upwards of 30 miles further nine times during the twenty years 1823-42 inclusive,
and we have seen during 1843 and 1844 it has once failed and once reached again.
This is an omission of no small importance as it both involves the failures or success
of the revenue§ of pargannah Raníá, the extent of the
§ Rs. 22,700 of which only Rs. 11,050 were collected in 1842.
Dhunúr land of which the accompanying map‖ will shew,
and renders arrangement necessary for the outlet of the
immense surplus body of water, for which Captain Baker
‖ Appendix A.
makes no provision beyond Mulhur on the Sirsa and
Fattíhabád boundary.

11. To us who are spectators this latter necessity appears very obvious, but
the attempt to shew in figures the actual quantity of water discharged by the Ghaggar
and Choya in a flood similar to the present from the data which alone we possess
is, I fear, impossible. I think, however, an approximation may be obtained in the
following manner. We know that the flood of this year has been one of the highest
remembered. It has reached (20 miles beyond) the Bíkanér frontier, thoroughly
inundating all the Dhunúr lands of Hissár, of part of Sirsa, and of the whole
pargannah Raníá. We may therefore fairly suppose it
* Page 24, line 25, of Report on projected Canals.
one of the characters thus described by Captain Baker.—
It will be seen "that the Ghaggar near Phúlad occupies a nearly flat valley varying
from two to three miles in width and unequally divided by a channel 80 or 90 feet
wide and 12 or 15 deep. There are times, however, when the water is said to rise
two or three feet above its edges and to fill the whole of the valley." From local
enquiry we know that the Ghaggar this year did so, and by comparing the present
height of the water with the traditional flood marks we know that when the "row"
reaches Bhatnér it always must fill the valley to much lower down than Phúlad.
To ensure against exaggeration let the valley† be assumed
† NOTE.—Just above the separation of the Ghaggar and Choya.
at 2,000 feet in breadth and $1\frac{1}{2}$ feet in mean depth the
channel at 80 feet in breath of which let 40 be taken at
12 feet mean depth and 40 at 6.

Let the velocity be assumed that observed by Captain Baker at Phúlad in 1841
or $2\frac{1}{2}$ per second, though obviously more is due to a much higher flood, and let the
time of discharge also be the same or 24 days, as we have already had as much this
year. Any late freshes we may have to be clear excess.

Then sectional area $2{,}000 \times 1\cdot5 \times 40 \times 12 \times 40 \times 6 = 3{,}720$, and the discharge = section area × velocity = $3{,}720 \times 2\cdot5 = 9{,}300$ per second. Take 9,000
cubic feet per second as the discharge in round numbers, and for the whole period
of 24 days, as we know there was little or no decrease of the flood for that length of
time.

Then 24 days' discharge at 9,000 cubic feet per second = 18,662,400,000.

From this may be deduced that as the total discharge of the Ghaggar in
1841 is to the total discharge of the Choya in 1841 so is the probable discharge

Note.—This year Cultivators on the main Ghaggar will be unable to sow an acre and have chiefly irrigated elsewhere to cultivate their rabbi.

of the Ghaggar in 1844 to the probable discharge of the Choya in 1844, or

As	4,106,476,800	:	622,907,200
...	18,662,400,000	,	2,820,277,528
Probable excess of 1844 over 1841	...		=2,197,370,328

Also as the total discharge of the Ghaggar in 1841 is to the total discharge of the Choya in 1841 had it been rectified according to Captain Baker's plan, so is the probable discharge of the Ghaggur in 1844 to the probable discharge of the Choya in 1844 had it been rectified according to Captain Baker's plan, or

As	4,106,476,800	;	2,322,855,360
...	18,662,400,000	:	10,556,508,167
Probable excess of 1844 over 1841, had the Choya been rectified			=8,233,652,807

Captain Baker says that 2,322,855,360 cubic feet of water would be more than sufficient for the wants of Hissar as far as the Sirsa boundary. We know that this year it has been fully supplied, as also a part of Sirsa. The estimate therefore of 28,202,775,528 cubic feet here calculated may perhaps be a tolerable approximation. In that case suppose the Choya had been rectified according to Captain Baker's scheme, what was to become of the excess of 8,233 millions of cubic feet which would have found their way to the end of his excavation? Would not this enormous body of water most probably cause great injury in the flat valley of the Dhunúr lands of Sirsa, and is there not a risk that were one-half the stream to come by the lower branch without an outlet through Sirsa, it would there be stayed while the remaining half would not be able to overcome the obstacles that create the Dhunúr and Anaki jhíl, and thus the Pergannah of Rania be entirely deprived of the advantages of irrigation.

12. I do not expect that my approximation in figures to the probable discharge of the Ghaggar during this year will meet with much attention, but adverting to the facts that in 1841 the collections* from the irrigated lands of Pargannah Fattiabád amounted to only 3,173 rupees, and those from Pargannah Rania to only 1,050 rupees, and that this year the same quantity of land has been irrigated as enabled then in 1838, to yield respectively Rs. 26,915 and Rs. 21,000† that the waters of the Ghaggar have further reached 20 miles beyond our frontier; that the water stood 8 feet higher on the water gauge in the wide jhíl of Dhunúr this year than in 1841, and in proportion throughout; and that similar floods have occurred ten times during last 22 years Adverting to these facts, it appears to me that we have obtained an important item of additional information as to the supply of water of the Ghaggar, and have also reason to calculate on much higher average profits from making use of the more profitable line of the Choya than Captain Baker's experiments in a minimum year warranted him in expecting.

* (See Appendix C.)

† *Note.*—This sum is the Jama of the Pargannah; the profit of the Zemindárs was known to be immense.

13. It now appears that whatever arrangements are made must be such as will accommodate very large bodies of water as well as economize scanty floods. If then, my opinion be found correct, that for the upper branch of the Ghaggar a certain small fixed quantum is required and that the whole of the rest of the "row" be turned down the Choya, it only remains to adopt‡ the regulating dam at Phulad to this purpose and carry on the rectification of the channel through Sirsa to a junction with the main stream. The additional expenses will be obviously recompensed by corres-

‡ *Note.*—Say by banding the half of the valley on the Ghaggar side and by constructing the sluice Choya of a greater breadth than the main Ghaggar one.

pnding yearly profits, since the prolongation of canal here suggested is through a soil fully adapted for irrigation.

14. The annexed statement (C.) of revenue collected from the Choya villages in each Pargannah of Hissár and Bhattianah, through which it takes its course, will shew that during the seven years 1837-1843 inclusive, the receipts were on the whole in the following proportions $\frac{1}{4}$th, 1, $\frac{1}{2}$, $\frac{1}{3}$rd, $\frac{1}{6}$th, $\frac{1}{8}$th $\frac{1}{4}$ nearly. The villages of the first Pargannah Jahannah are fixed at an average of 2 $\frac{2}{7}$ th annas per acre which is a merely nominal assessment and being the nearest the Phúlad, would pay eight times as much at least were the proposed improvements carried out. The same may be said of Ruttía. Further, this rate of increase would be *certain.* The Nála villages of Pargannah Fattiábád are held in Khám and would be settled at more than its highest receipt of Rs. 26,915, and also *certain.* Those of Pargannah Sirsa paid in 1837 a Jama of Rs. 15,720, which has now fallen to Rs. 10,155, and that is never realized. This year's high flood has shown that unless something is done to open the channel, the Sotur villages of Sirsa will be ruined. The prospects of Pargannah Ranía under an improved system must be determined by the measures recommended by a competent person. But the villages which in 1842 paid only Rs. 385 out of a Jama of Rs. 22,000, cannot be affected except for the better. My rough estimate of increased revenue would be therefore, omiting Pargannah Ranía thus—

		Rs.
* Tohanna	...	19,536
† Ruttía	...	1,680
Fattiábád	...	27,000
Sirsa	...	15,000
		63,016
The average of last seven years' receipts‡	...	16,283
Yearly increase	...	46,733

* 2,442
8
19,536

† 210
8
1,680

		Rs.
‡ 1837	...	7,638
1838	...	40,406
1839	...	18,069
1840	...	19,982
1841	...	9,271
1842	...	7,298
1843	...	11,328
	7	1,13,987
		16,283

15. It is obvious that to increase the volume of the Choya is artificially to increase the regularity of supply, which again in a still higher degree tends to the security of the crop as it makes it worth the attention of the zamindár to expend capital in artificial expedients, such as banding in water in his Rabbi or wheat fields, banding out an excess of water in his rice* khets, constructing reservoirs, which would make him independent of rains, &c. By all these are the probabilities of profit multiplied.

* Thus the unexpected high flood of this year destroyed the whole of the rice crop in Fattiabad, which being Kham, Tahsil, Government will probably lose between 3,000 and 4,000 rupees.

16. From the considerations above detailed I am induced to submit the following proposition for such notice as you may conceive it to deserve; that a reference be made to the Hon'ble the Lieutenant-Governor, North-Western Provinces; (1st), with a view to obtaining the concurrence of the Patiála Darbár to the construction of such work at Phúlad and the villages below it as may hereafter be deemed advisable; (2nd), to sanction the appointment* of an Engineer Officer, as soon as possible, to report scientifically on the discharge of the Ghaggar of this year in as far as that may be ascertained by flood marks, &c., and in case his enquiries should confirm the opinion that Captain Baker's scheme is inadequate to be most advantageous to the disposal of high

* This measure has been frequently recommended, but if not complied with early in this instance, little hope can remain of ascertaining the discharge of the Ghaggar for this year, and it is doubtful if there will be so high a flood next year again.

floods (which may be expected in a proportion of 10 to 12 or nearly); that he report on the measures which will carry out Captain Baker's principle in the most economical manner, with the greatest prospect of recompensation.

17. I have to apologize for the unusual length of this report. The importance of the subject to the welfare of this tract is the best excuse for any attempt to assist in its improvement.

From H. M. Elliott, Esq., Secretary to the Sudder Board of Revenue, N. W. Provinces, Agra, to the Secretary to the Government, North-Western Provinces, Agra, No. 587 of 1844.

REVENUE.
Present:
T. J. Turner, Esq., Senior Member.
and
H. S. Boulderson, Esq., Junior Member.

I AM directed to request that the accompanying papers respecting the inundation of the Ghaggar may be laid before His Honor the Lieutenant-Governor for his consideration and orders.

2. The Board consider that the Report of Mr. Vans Agnew renders it a matter of certainty that a very large increase of revenue, founded on a great amelioration of the country, must be the immediate effect of the proposed works at Phúlad. This increase of revenue is estimated by Mr. Vans Agnew on apparently solid data to be about Rs. 46,000 per annum, but if it be assumed to be only half of that sum, still as the estimate of the expense made by Captain Baker was at the outside Rs. 34,000, and if 20,000 more be added for the increased magnitude of the works (rendered necessary by the ascertained greater body of water to be managed), still there seems to the Board no doubt that the measure would yield to the Government 50 per cent. on the outlay.

From T. T. Metcalfe, Esq., Commissioner of the Dehli Division, to the Secretary, Sudder Board of Revenue, North Western Provinces, No. 315, dated Dehli, 20th November 1844.

Commissioner's docket No. 96		Dated 31st March 1843.
Do. do. „ 96 A		
Do. do. „ 96 B		
and enclosures.		

Board's letter No. 92, of 7th April 1843.

IN continuation of my letter No. 232, dated 8th August last, and with reference to correspondence as per margin, I have the honor to submit the accompanying report from the Officiating Superintendent of Bhattíana, forwarding one of much interest from Mr. Vans Agnew employed on special duty in those districts.

2. The object in contemplation is by the construction of suitable works at Phúlad, at which point the upper and lower branches of the Ghaggar separate, to regulate the flood of water so as to prevent wastage and inundation of lands, which might otherwise be successfully cultivated for the Rabbí, and at the same time advantageously direct the excess into the Choya Channel.

3. It is true, as presumed by the Hon'ble the Lieutenant-Governor, under date 20th October 1841,* that Phúlad has been transferred to the Rája of Patíála, but not so the right of putting in jeopardy the interests of Government by refusing to comply with a requisition both just and reasonable.

* As per letter from Secretary to Government, to Secretary, Sudder Board. (*See* published Reports on projected Canals in the Dehli territory.)

4th. On the decision of Government on this point depends the necessity for the appointment of an Engineer Officer, as recommended by Mr. Vans Agnew; but

I would earnestly solicit the favorable consideration of superior authority to the proposed works as of the highest importance to the future prosperity of the pergannah in question.

From J. Thornton, Esq., Secretary to Government, North Western Provinces, to the Secretary to the Sudder Board of Revenue, North Western Provinces, No. 1164, dated Agra, the 20th March 1845.

Revenue Department.

I AM directed to acknowledge the receipt of your letter No. 537, dated the 3rd December last, with its enclosures, respecting the inundation of the Ghaggar river, and in reply, to intimate that the Hon'ble the Lieutenant-Governor is not convinced that the undertaking proposed by Mr. Vans Agnew will be near so profitable as is supposed, and that His Honor has moreover no prospect at present of commanding the means necessary for the execution of the work.

2. The subject, however, will not be lost sight of; the Governor-General's Agent in the North Western Frontier is now engaged in collecting information regarding this stream. A copy of Mr. Vans Agnew's report will be forwarded to him, and he will be desired to take into his consideration the feasibility and expediency of the project.

3. The original encloures of your letter are herewith returned, copies being retained for record.

ORDERED that with reference to his letter No. 315, dated 20th November 1844, a copy of the foregoing orders of Government be transmitted to the Commissioner of Dehli for his information, with docket No. 55.

From T. H. Thornton, Esq., Secretary to Government, Panjab, to the Officiating Commissioner and Superintendent, Hissár Division, No. 1009, dated 4th August 1873.

I am desired to acknowledge the receipt of your letter No. 58, dated 21st May 1873, submitting a report regarding the dispute between the British Patiála Zamindars as to the right of watering the lands of their villages from an old channel of the Ghaggar, said to be silted up owing to the clearance of its head having been prohibited by the Patiála authorities.

2. In reply, I have to express to you the Lieutenant-Governor's thanks for the very careful and complete manner in which the report has been submitted, and to forward herewith copy of a letter No. 2894, dated 16th July, from the Joint-Secretary, Irrigation Department, upon the subject.

3. From that letter it will be seen that Colonel Crofton differs from the conclusions at which you have arrived in regard to the 1st and 2nd heads of your enquiry, but he agrees in your views upon the 3rd, 4th, 5th and 6th questions. His Honor, I am desired to state, accepts generally the conclusions summarised in para. 15 of Colonel Crofton's letter, *viz*:—

(1).—That the bed of the Choya has silted not only close to the head, but for some distance along its course.

(2).—That no partial clearance near the head would be of any material benefit.

(3).—That no such general clearance as would be really useful has been made since the villages at the head of the Choya were transferred to Patiála.

(4).—That even if a general clearance were effected, the benefit would not last long without the aid of a dam across the main Ghaggar.

4. Whether measures should be taken for constructing a dam across the main Ghaggar with a view to improving the water-supply of the Choya channel or of the Rangoi cut, referred to in para. 55 of your letter and in para. 12 of Col. Crofton's letter, is a question the decision of which awaits the result of enquiries which have been called for by the Irrigation Department from the Financial Commissioner; but, so far as is at present known, it is doubtful whether the probable results will justify the necessary expenditure.

5. His Highness the Máharája of Patiála will be addressed in regard to the matter referred to in para. 16 of Colonel Crofton's letter.

From T. H. Thornton, Esq., Secretary to Government, Panjab, to His Highness the Máharája of Patiála.

WITH reference to correspondence ending with Mr. Griffin's letter to your Highness, dated 30th December last, on the subject of the clearance of the old Ghaggar channel, I am desired to intimate to your Highness that a full enquiry has been made upon the subject by Lieutenant-Colonel McMahon, Commissioner and Superintendent, Hissár Division, and the result of that enquiry goes to show that no general clearance of the Choya Nala has been regularly made by villagers in the British territory since the villages were transferred to the Government of Patiála.

Further, it is the opinion of Lieutenant-Colonel Crofton, Joint-Secretary in the Irrigation Department, that even if a general clearance were effected, the benefit would not last long without the aid of a dam across the main stream of the Ghaggar. Whether it may be desirable to construct a dam across that river is a matter for further consideration; but for the future to put an end to all disputes as to the fact of the channel of the Choya silting higher than it is at present, it is desirable to establish a permanent level across the bed of the main Ghaggar at the point where the Choya channel leaves the main channel.

As the point at which the permanent level would be erected is within the limits of your Highness's territory, I am to request your Highness's permission to its construction. Should your Highness agree, the Officers of the Irrigation Department will be instructed accordingly.

With reference to your Highness's complaint that numerous dams have been erected in the Kaithal territory, intercepting the water of the Surústí, in consequence of which numerous villagers in the Karmgarh Iláka of your territory have been seriously injured, I am to state that separate enquiries will be made under the direction of the Financial Commissioner, and I am to request your Highness will cause one of your Ahlkars to attend at the investigation whenever called upon to do so by the Officer appointed to make enquiry.

From the Máharájah of Patiála, to the Secretary to Government, Panjab.

I beg to reply to your letter on the subject of the clearance of the Ghaggar channel, in which I am desired to say whether or not I accept the view of Colonel Crofton.

It appears from your letter that in the opinion of Colonel Crofton the point at issue is "whether the head of the old channel was ever cleared out since the villages bordering that portion of it were transferred to Patiála." And that Officer states that the transfer took place in 1842.

Colonel Crofton quotes a passage from a Settlement Report written before 1841, to the effect "that it is expedient to clear out the channel from timeto time." This quotation does not show that the channel used certainly to be cleared out in its upper course within Patiála territory at the disputed spot. It may refer to lands bordering its lower course. Moreover, the passage quoted does not describe any past action, but merely states what should be done in future, whether what was considered expedient to be done, was done or not is not stated. But if advanced as a proof, the fact should be proved as having actually taken place.

Furthermore, as in Colonel Crofton's own opinion, the point at issue was whether or not the channel was cleared out after the transfer of the villages to Patiála, only occurrences subsequent to 1842, when the villages were for a second time transferred to Patiála, can be cited as proofs, not those previous to 1841, when the villages in question along with others in the Naili Ilaka were in possession of the British Government.

The references made by Colonel Crofton to Captain Brown's reports of 1839-40 and Captain Baker's scheme of 1831, are irrelevant, for those reports merely prove the existence of the channel and the irrigation of lands therefrom. The point under discussion is not the existence or non-existence of the channel, but the clearance of it, and what is required is proof of the channel having been cleared out subsequently to 1842.

The oral evidence of zamindárs (interested parties) without documentary proof of clearance having been effected subsequently to 1842, according to Colonel Crofton's statement cannot be used as any argument. For, as these state positively that the channel was cleared out, my subjects on the other hand deny it as vehemently. There is no written proof and there is no reason for giving greater credit to the assertions of one class than to those of the other.

Colonel Crofton writes :—" It is clear that the villages along this old channel have a right to a share in the Ghaggar water, and as they cannot at all events now obtain any without clearing out the head, it is only bare justice to them to allow the clearance even if it had never been done before." This passage itself shows that Colonel Crofton is not himself sure that the clearance was actually effected. As regards the justice of the proposal it will be discussed hereafter.

From the foregoing it is clear that Colonel Crofton's opinion is founded on presumptions, and the point at issue stated by him, viz., whether the channel was cleared out or not subsequently to 1842, has not been positively determined even in his opinion. This point then not having been ascertained, no conclusion can be drawn from it.

In this case the officers of the British Government can found their claim to clear out the channel on two grounds—

1st.—On the fact of the channel having been cleared out on previous occasions. This argument has been already discussed above.

2nd.—On the ground that the advantages derivable from the Ghaggar stream should not be monopolised by any particular class, but should be participated in generally. Colonel Crofton represents this view as one founded on justice. The reply to this argument is that the Sursútí is as much a source of general good as the Ghaggar. But the British authorities of the Karnál District have erected numerous dams in the Kaithal territory to intercept the waters of the Súrsúti, in consequence of which numerous villages in Ilaka Karmgarh of my territory have been ruined. If the Government acting on this view of justice, and on the ground of the stream being a source of general good, should cause these dams to be demolished and permit my villages being irrigated from it, Colonel Crofton's view would be admissible as correct in the case of the Ghaggar.

It is also worthy of the consideration of the Government, that the channel of which the head is proposed to be cleared out, is not an artificial canal but a natural branch of the Ghaggar, in which water flowed in abundance formerly, but of which the water supply has been now stopped owing to an alteration in the course of the river. As this channel has silted up from natural causes, another new channel has been formed by the operation of similar causes as mentioned in your letter.

It is also to be borne in mind, that sometime ago, at the instance of the Hissár authorities a rule was laid down by the Government, which is still in force, prohibiting the interception of the water supply from the Ghaggar by the erection of "Bands," and directing that the natural flow of the stream be not interfered with. The effect of the proposal under discussion is virtually similar to that of erection of dams, the object being to divert by artificial means (in the present case by excavation), the natural course of the stream.

Nevertheless, although there exist the foregoing substantial grounds to invalidate any right to clear out the channel, and to frustrate the views of Colonel Crotton, and notwithstanding the objections advanced steadily by the Officers of my Government, before competent authority, ever since the first discussion of the question; bearing in mind, as stated in your letter, that sixty British villages are deprived of irrigation, owing to which a loss of revenue to the amount Rs. 10,000 per annum is entailed on the Government, also that the British authorities have been anxious for the last twelve years to clear out the channel in question, I hereby agree entirely with the view of securing the satisfaction of the British Government, and considering that the water supply from a river ought to be *generally* utilized to the channel being cleared out, without heeding the injury which is anticipated to be caused to my own villages by the diversion of the water supply from them by means of clearing out the channel in question. Any concession on the British Government in favor of my villages bordering the Súrsútí river, which were formerly irrigated from it, but which have been utterly deprived of irrigation since the erection of dams in the Kaithal territory, and have been thereby greatly injured and subjected to great loss, representations regarding which have been frequently made to the British authorities, is left entirely to the sense of justice and liberality of the Government.

From W. M. Young, Esquire, Officiating Secretary to Financial Commissioner, Panjab, to the Officiating Secretary to Government, Panjab, No. 1086, *dated Lahore, 9th September* 1874.

Commissioner of Hissár's report on bands in Choya Nala.

I AM directed to forward, for the orders of Government, a report by the Commissioner of Hissár, No. 152, of the 21st ultimo, with enclosures, on the subject of the bands in the Choya Nala.

Origin of report.

2. This report originated in a reference by the Deputy Commissioner of Sirsa, No. 111, of the 13th of June last, which was forwarded to you with this office No. 972, of the 17th ultimo. The object of the Deputy Commissioner's reference was the removal of the bands on the Choya Nala in the Hissár district.

Description of Choya Nala.

3. The Choya Nala is a natural stream, and a branch of the Ghaggar, which it leaves at Phulád, in the Patiála State. The mouth of the Choya is six feet above the mean level of the bed of the Ghaggar, and, except in the autumn floods, the Choya is dry.

No advantage to be gained by deepening mouth or lowering bed of Choya.

4. In a previous report submitted by the Commissioner, No. 58, of the 21st of May 1873, it was shown that no advantage would be gained by deepening the mouth of the Choya or lowering its bed for the first 29 miles of its course. To abolish the

bands near Fatehabád, as recommended by Mr. Wakefield in paragraphs 9 and 10 of his report, would have no effect on the supply of water from the Ghaggar to the Choya.

Most effectual remedy to increase supply of water to Choya Nala.

5. The most effectual remedy which could be applied to increase the supply of water to the Choya Nala would be to dam the Ghaggar just below the bifurcation of the two streams, as proposed by Captain Baker in 1841. The next best remedy was carried out in 1865-66 by Major Fendall, then Deputy Commissioner of Hissár, who repaired, improved and re-aligned an old water-course called the Rangoi, which, from the sketch given in paragraph 8 of the Commissioner's report, would appear to form a new head from the Ghaggar to the Choya.

Reasons assigned by Commissioner for the falling-off of the water-supply.

6. The Choya in the time of Firoz Sháh, A. D. 1351-1388, conveyed water to Sirsa, and thence onwards to its parent stream, the Ghaggar, which it re-joins. The Choya now no longer carries the same amount of water ; for this the Commissioner assigns four reasons:—

1.—Natural causes.

2.—The extension of irrigation.

3.—The bands in the Ghaggar and its distributaries beyond the Hissár division.

4.—The absence of a band which the Patiála authorities say formerly existed in the Ghaggar a little below the mouth of the Choya.

Duration of grievance of short supply of water in Choya.

7. The grievance of the Sirsa zemindárs on account of the short supply of water in the Choya is of 40 years standing, and it is remarkable, as Colonel McMahon observes, that rivers and streams have disappeared in the Hissár division. The extension of cultivation and the consequent absorption of the rain-fall partly account for this.

Removal of old and erection of new bands in Choya. Procedure regarding—

8. Even if the bands on the lower Choya were removed it is very doubtful whether the same quantity of water as formerly would reach the Sirsa district. The question is whether to increase the supply of water to the Sirsa district it is possible to remove these bands, and whether, if the bands can be removed, it is desirable to do so. The erection of new bands on the Choya has been prohibited, and the prohibition will, the Commissioner states, be enforced under Section 430 of the Indian Penal Code,—"mischief by causing diminution of the supply of water for agricultural purposes." It is, however, of little use to stop the erection of new bands if the old and substantial ones are to remain, and these can only be removed by taking action under Part II of the Canal Act VIII of 1873,—"application of water for public purposes."

Limitation as regards suits.

9. Section 27 of the Limitation Act (IX of 1871) provides that when a water-course or the use of water has been peaceably and openly enjoyed for more than 20 years the right shall be absolute and indefeasible. Article 150 of schedule II of the Act allows suits in the name of the Secretary of State for India to be brought within 60 years, but it is doubtful whether Section 27 of the Act does not over-ride article 150. The Commissioner holds that it does, because schedule II must be subject to the limitations contained in the body of the Act, and because Section 8, last clause but one, of the Canal Act allows claims against Government to be acquired under the Limitation Act, Part IV.

10. In the opinion of the Financial Commissioner Government cannot proceed to remove the old bands except under the Canal Act, Part II, and if action is taken under that law compensation must clearly be given for stoppage or diminution of supply of water to which a person is entitled under the Indian Limitation Act, Part IV. The compensation payable would consist of two items, of which one would be on account of the substitution of inferior for superior crops which would follow the diminution of the supply of water, and the other would be on account of the stoppage of water altogether to all or part of the 23,437 bighas of land inclusive of the area given in paragraph 2 of the Deputy Commissioner of Hissár's No. 290, of the 14th of August last, which are now irrigated by the Choya.

Financial Commissioner's opinion regarding the removal of old bands.

11. Under these circumstances it is questionable whether it would be advisable to apply Part II of the Canal Act for the removal of the band.

Considerations on which the advisability of removing the bands depends.

The advisability of the measure depends, as the Commissioner says, upon three considerations :—

I.—What amount of compensation would require to be paid if the bands are removed ?

II.—Would the Sirsa zemindárs gain more than the Fatehabád zemindárs would lose ?

III.—Can the waters of the lower Choya be utilized without bands.

12. The Financial Commissioner agrees with the Commissioner that a survey will be required before these questions can be answered, and that even when a survey is made the idiosyncracies of judges and assessors with regard to question I will remain unknown quantities.

Concurrence of Financial Commissioner in Commissioner's opinion.

13. The Commissioner now suggests—

Commissioner's suggestion regarding the Choya bands.

I.—That the erection of new bands be strictly prohibited.

This, the Financial Commissioner remarks, has always been the order, though it has been evaded.

II.—That bands 4, 5, 7, 8, 13 and 14 of the list given in paragraph 2 of the Deputy Commissioner of Hissár's No. 290, of the 14th of August, be demolished.

The Commissioner proposes to bring civil suits against the zemindárs if they refuse to demolish these bands, but the Financial Commissioner does not see how the Deputy Commissioner can institute civil suits in the manner proposed. He considers that the recent bands noted by the Commissioner should be demolished by order, and nothing more said.

III.—That the Deputy Commissioner Hissár, should be invited to get a code of rules agreed to regulating the time each band should be kept closed, and to appoint a panchayat to enforce the rules.

In this proposal the Financial Commissioner concurs.

14. The Maháràja of Bikanir has complained regarding the failure of the supply of water from the Choya to his territory, and his complaints were forwarded to Colonel McMahon for report with the Secretary to Government's No. 736, of the 27th of April last.

Maháràja of Bikanir's complaint regarding the failure of water-supply from the Choya.

The bands to which the Mahárája objects are the same bands regarding which the Sirsa zemindárs complain. From the Commissioner's report it seems that the Choya is merely a loop of the Ghaggar, which it re-joins long before the Ghaggar enters Bikanir territory. The objection of the Mahárája appears therefore to the Financial Commissioner far-fetched, as the bands of which he complains are not on the main Ghaggar. If the objection were allowed all use of the water of the Ghaggar and Choya might be objected to as diminishing the supply of water to the Bikanir territory.

Commissioner's suggestion recommended for adoption.

15. Colonel McMahon has, the Financial Commissioner observes, given a very clear report on the subject of these bands in the Choya. The subject is one which has often been taken up, but it seems to gain new life with the accession of each new district officer. Colonel McMahon's conclusions are just and sound, and should, the Financial Commissioner thinks, be adopted.

[illegible]

Printing of the correspondence recommended.

17. In order to prevent the subject now under discussion from passing out of sight the Financial Commissioner proposes that a selection of the correspondence be printed.

From Lieutenant-Colonel C. A. McMahon, Officiating Commissioner and Superintendent, Hissár Division, to the Officiating Secretary to Financial Commissioner, Panjab, No. 152, *dated Hissár, the* 21*st August* 1874.

Bands in the Choya near Fatehábád in Hissár complained of by the Deputy Commissioner of Sirsa.

* 1. From Deputy Comr., Hissár, No. 290, dated 14th August 1874.
2. From Deputy Commissioner, Hissár, No. 298, dated 13th July 1867, and statement.
3. From Deputy Comr., Hissár, No. 313, dated 24th July 1867.
4. From Deputy Comr., Hissár, No. 319, dated 29th July 1867.
5. To Deputy Commissioner, Sirsa, No. 113, dated 31st July 1867.

WITH reference to Deputy Commissioner of Sirsa's No. 111, dated the 13th June, which you have already received, I have the honor to submit a copy of the correspondence noted in the margin,* and to offer the following remarks.

Brief account of the source, course and condition of the Choya Nala.

2. The Choya Nala is in its upper portion a natural stream, and is now probably very much in the condition it was in 60 or 70 years ago.† It is extremely serpentine in its course; whilst it is narrow and of no great depth. Its mouth, at its point of departure from the Ghaggar at Phulád in the Patiála State, is 6½ feet above the mean level of the bed of its parent stream.

A The accompaniments to which are herewith submitted,—Nos. I. to V.

When and whence the Choya receives its supply of water.

3. The Choya is ordinarily dry, but during the autumn floods receives a considerable supply of water from the Ghaggar. ‡

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† Mr. Hammer, in his report on the proposed storage works, remarks at paragraph 34 "* * it may be inferred**** that the *capacity* (although perhaps not the actual *annual discharge*) of the main stream, determined by Captain Baker, as well as that of the Choya, has remained practically unchanged up to the present day."

‡ Captain Baker estimated in 1841 the total supply received by the Choya from the Ghaggar at 622 million of cubic feet; but this estimate was based on calculations made during an unusually favorable year.

The results reported to Government in May 1873 regarding the upper Choya.

4. In my No. 58, of the 21st May 1873, to the address of the Secretary to Government, Panjab, I reported at length on the upper Choya after having inspected it in company with Mr. Hammer, Executive Engineer, and I showed that no practical advantage would be gained by deepening the mouth or lowering the bed of the stream for the first 29 miles of its course.

The mean slope of the bed of the Choya, and what the result would be were either the bed or the mouth of the nala lowered.

5. The mean slope of the bed of Choya between its mouth and the bridge at Dhársul (a distance of 153,000 feet) is only 1 in 10,000 feet; * and, as the discharge of water in a running stream depends on the velocity, and the velocity on the mean level of the bed, it follows that nothing would be gained by lowering the bed of the Choya from Dhársúl bridge towards the Ghaggar; for the effect would be simply to reduce the slope of the bed to a dead level and retard the velocity of the stream. If, on the other hand, the mouth only of the Choya were lowered without also lowering the bed from the mouth down to the Dhársúl bridge, the effect would simply be to temporarily form a pond of dead water that would speedily silt up again.

Shows why the remedy proposed by Mr. Wakefield, viz., the demolition of the bands, would have no effect on the supply of water poured into the Choya by the Ghaggar.

6. In view of this state of things I remark in passing that the remedy proposed by Mr. Wakefield in his paragraphs 9 and 10, namely, to demolish the bands in the Lower Choya near Fatehábád, would have no effect on the supply of water poured into the Choya by the Ghaggar; neither would it sensibly affect the volume of water delivered by the Choya at the Dhársúl bridge. The bands are some 20 miles or more below the latter point, and some 50 miles below the mouth of the Choya. The bands may cause *local* silting in the *Lower* Choya, but they can have no effect on the supply of water furnished to the Choya by the Ghaggar, or on the velocity of the stream in the Upper Choya.

What the effect would be were Captain Baker's proposal of throwing a regulator across the Ghaggar adopted.

7. If the supply of water from the Ghaggar is to be increased other expedients must be tried. The most effectual remedy is that proposed by Captain Baker in 1841, namely, to throw a band or regulator across the Ghaggar just below the bifurcation of the two streams, and then cut off the serpentine bands of the Choya. The latter plan would reduce the length of the first 18·3 miles to 9·72 miles, and, according to Captain Baker's calculation, would increase the slope from 4 to 8 inches in the mile.

What the effect has been of Major Fendall, Deputy Commissioner, Hissár's plan of repairing, improving and in part re-aligning the Rangoi.

8. The next best remedy is that which has been actually carried out. In 1865-66 Major Fendall, then Deputy Commissioner of Hissár, repaired, improved and in part re-aligned an old water-course called the Rangoi. The following sketch will show at a glance the nature and character of the work.

The mean slope of the Rangoi.

9. The Rangoi suffers from the same defect as the Choya, namely, the mean slope of its bed nearly approaches to a dead level.

The present condition of the Rangoi.

10. This year Colonel Forster cleared out and repaired the Rangoi, and I am told by the zamindárs interested in the success of the undertaking that this season the Rangoi brought down a considerable volume of water.†

* For these figures I am indebted to Mr. Hammer.

† Since writing this I have heard that the Rangoi has again burst its banks, the water escaping back into the Ghaggar. I hope to visit the spot early in the approaching cold season to see how the weak point can be permanently strengthened.

The former condition of the lower Choya, and the causes which have led to it present diminished water-supply.

11. The *lower Choya* appears to have been very much improved during the reign of Feroz Sháh, and to have been, in part at any rate, re-aligned. In those days the Choya seems to have conveyed water to Sirsa, and thence onwards to its parent stream, the Ghaggar. That it no longer does so is, I think, attributable to several causes, namely:—

1*st.*—Natural causes;

2*ndly.*—The extension of irrigation in the Fatehábád and Barwála ilaquas;

3*rdly.*—Bands in the Ghaggar and tributaries beyond the limits of this division; and

4*thly.*—The absence of a band which the Patiála authorities say formerly existed in the Ghaggar a little below the mouth of the Choya.

Commissioner's remarks confined to two of those causes.

12. I shall confine my remarks to the two first-mentioned causes.

The diminution of water-supply in the Choya as regards Sirsa is no recent grievance.

13. The failure of the Choya to deliver water at Sirsa is by no means a recent grievance. I gather from printed correspondence which I read when writing my report on the upper Choya that as far back as 40 years ago the grievance was an old one, and even in those days complaints were made of the diminution of the water-supply of both the Ghaggar and the Choya.

Mr. Hammer, Executive Engineer's remarks regarding the failure of floods in the Ghaggar and Choya.

14. Mr. Hammer, in his report on the proposed water storage works (paragraph 29), remarked as follows:—

"From the relative levels of these stream," (*viz.*, the Ghaggar and the Choya) "and from the high water marks on trees and masonry structures it appears that the floods still attain occasionally the height observed 30 years ago, but the regularity of their former periodical appearance seems to have changed, inasmuch as an entire failure of the high floods is reported to have been of more frequent occurrence in latter years."

The probable date of the diminution of the water-supply.

15. That the water-supply of the Ghaggar and Choya has sensibly diminished within the last 70 or 80 years is, I think, highly probable.

Disappearance of rivers and streams in the Hissár division.

16. One of the most striking facts in the *recent* geological history of this division, and one which is intimately connected with some of its prominent physical features, is the disappearance of rivers. Wheeler, in his Mahábhárata, tells us how a river of considerable size which once flowed between Hissár and the Satlej so late as in the days of the Aryans has since been blotted out of sight. If you will turn to the Surveyor-General's map of the Hissár, Dehlí and Ambálah divisions (edition of 1868) you will find marked thereon no less than four streams between Sirsa and the Satlej, of which there now remains no trace except a slight depression of the surface of the country, in which it is said shells may be dug up in great abundance. Several towns in the deserts of Bikanír are popularly believed to have been founded on the banks of running streams.

The causes which have led to the disappearance of rivers.

17. To attempt to account for the disappearance of the river of which the Aryan bards sang it would be necessary to speak of the shrinking of Himalayan glaciers * and other matters foreign to the subject of this report; but it is relevant to the latter to inquire why the streams above alluded to, entered in the Surveyor-General's map, have disappeared, and why the supply of water in the Ghaggar and Choya has diminished.

* In Volume III., Memoirs, Geological Survey of India, pages 155-156, the presence of erractic blocks of granite deposited by glaciers as low as 3,000 feet above sea level at Dharmsála and other places in the Kángra valley is pointed out.

18. Several causes have probably contributed to the result which has been produced. It will be sufficient, however, to call attention to one, the cogency of which will, I should think, be readily admitted. I allude to the great extension of cultivation which has taken place under British rule. Where heavy rain falls on hard uncultivated land it does not readily sink into the soil, and a considerable quantity, proportional to the heaviness of the fall, runs along the surface and finds its way into depressions, and thence into neighbouring nalas and streams. Where, on the other hand, ground has been ploughed up rain readily sinks into the broken soil and its escape is prevented by the small ridges thrown up round each cultivated field.* In a well-cultivated and flat country most of the rain stops where it falls. Small feeders of nalas are ploughed up and filled in, and numerous small streams cease to yield their wonted supply of water. The extension of cultivation must, in the above way, lead to the shrinking of streams which depend for their supply of water on the rain-fall of the plains.

Shows in what way the great extension of cultivation under the British rule has contributed to diminish the water-supply of rivers and streams.

19. I notice these facts because I think it highly probable that were all the bands of the lower Choya removed the expectations of the Sirsa zamindás would, to a considerable extent, be disappointed. Unless artificial works are constructed in addition to the removal of the bands, I shall be much surprised if the Choya ever again conveys to Sirsa a volume of water equal to that delivered by it in its palmy days.

The construction of artificial works, and not the demolition of the bands complained of, would fulfil the expectations of the Sirsa zamindárs.

With the foregoing remarks Commissioner proceeds to discuss the subject of Deputy Commissioner of Sirsá's letter.

20. With these general preliminary remarks, I proceed to discuss the subject mooted in the Deputy Commissioner of Sirsa's letter in detail.

Whether the bands can be removed, and whether it is desirable to remove them.

21. The questions for consideration are—whether the bands complained of by the Deputy Commissioner can be removed, and, if so, whether it is desirable to demolish them.

22. The erection of new bands has long since been stringently prohibited. Some 18 months or more back I pointed out to the Deputy Commissioner of Hissár, who up to that date had illegally fined persons on the *revenue* side for transgressing this rule, that Section 430, Indian Penal Code, armed him with ample powers to cope vigorously with the evil as magistrate of the district.

The course followed in preventing the erection of new bands.

The power of the magistrate of the district under Section 430, Indian Penal Code, to stop the erection of *new* bands.

23. I think the case may fairly be brought under Section 430, Indian Penal Code, and, if so, the magistrate of the district has it in his power to effectually put a stop to the erection of *new* bands.

24. This section, however, will not aid us to get rid of the bands entered in the Deputy Commissioner's list. The district authorities have stood by and looked on whilst the bands were being made, and it would be unseemly and improper now to call in the aid of the criminal law to get rid of bands erected years ago. In many cases rights have grown up by prescription which cannot be disregarded.

The section quoted above does not meet the present case.

To remedy the evil complained of, old and substantial bands should be removed.

25. It would be of little practical use to get rid of some of the small bands if several old substantial ones are allowed to remain. But how can the latter be removed?

* When riding down the Choya the other day I noticed bands parallel to the Choya thrown up to prevent rain water from draining down from fields into the Choya. This is typical of what goes on over nearly the whole of the area that feeds the Choya and the Ghaggar.

The law bearing on the above subject.

26. In order to answer this question it is necessary to consider the law bearing on the subject.

The object in view can be attained only by taking action under Part II of the Canal Act.

27. I am afraid there is only one way of obtaining the object in view, and that is by taking action under Part II of the Canal Act. I do not think there would be any use instituting a civil suit for the removal of any of the more ancient bands; for I think the owners of those bands have acquired rights by prescription which are indefeasible.

Provision of Section 27 of the Limitation Act.

28. Section 27 of the Limitation Act provides that where a water-course or the use of water has been peaceably and openly enjoyed by any person for more than 20 years, the right shall be absolute and indefeasible.

Commissioner is of opinion that article 150 of Schedule II is not intended to over-ride Section 27 of the Limitation Act.

29. It may at first sight be supposed that an exception exists in favor of Government, and that Article 150 of Schedule II of the Act gives Government the right to sue in the name of the Secretary of State for India any time within 60 years. I do not think, however, that Article 150 is intended to over-ride Section 27 of the Act. On the contrary, I am of opinion that Schedule II must be held to be subject to the limitations contained in the body of the Act.

Thinks that the extended period of 60 years does not extend to the special class of cases covered by Section 27 of the Limitation Act.

30. It would not, I think, be a sound interpretation of the Act to hold that 20 years is the period fixed for the acquisition of ownership by possession when Government is not a party to a suit, but that 60 years is the period when a suit is brought in the name of the Secretary of State for India. Government has the benefit of the extended period of 60 years in ordinary cases I admit, but I do not think it has in the special class of cases covered by Section 27 of the Act.

Shows by a reference to the last clause but one of Section 8 of the Canal Act that the view of the law above propounded is the one contemplated by the legislature.

31. That the view of the law above propounded is the one contemplated by the legislature is, I think, borne out by a reference to Section 8, last clause but one of the Canal Act. This clause provides that "no right to any such supply of water as is referred to in clauses (*e*), (*f*), or (*g*) of Section 8 in respect of any work or channel not in use at the date of the notification shall be acquired as against the Government except by grant or under the Indian Limitation Act, 1871, Part IV;" that is to say, this clause contains an admission that a right to the use of water may be acquired against Government under the provisions of Section 27 of the Limitation Act. There is no allusion to an extended period of 60 years under Article 150 of Schedule II.

If the above view of the law be correct, a civil suit against the owners of the bands would not be successful.

32. If this view of the law be correct, it follows that a civil suit could not be brought against the owners of any of the more ancient bands to compel them to demolish those bands with any reasonable hope of success.

The reason why the civil suit would not be successful.

33. The owners of those bands have enjoyed their right for more than 20 years; they have enjoyed it openly; and, as their right was admitted by Major Fendall in 1865 and by Mr. Naesmyth in 1867, I think it would be difficult to show that the enjoyment was not peaceable.

34. I think it would be very difficult to prove satisfactorily, by oral evidence, that the principal bands entered in the Deputy Commissioner of Hissár's list are not of more than 20 years standing. The zamindárs of the Sirsa district would doubtless come forward in a body to swear one way, and the zamindárs of the Hissár district would to a man swear equally hard the other way. I found, when I visited the locality a few days ago, that respectable lambardárs of villages not in any way interested in the Choya declared their conviction that the bands were ancient and had never been removed.

Unreliability of oral evidence to prove that the bands are not of more than 20 years standing.

35. Then, again, any evidence that might be forthcoming to show that the bands had been occasionally broken through would be readily explained by the fact that the bands are opened year by year and the water passed on from one band to the next in succession. On this point see my remarks further on.

The fact of the occasional breaking through of the bands how accounted for.

36. In the event of a suit a question *might perhaps* be raised, though I think it very improbable, whether a suit could be brought at all in the name of the Secretary of State for India. In English law in respect of Crown rights a broad distinction is drawn between navigable and unnavigable rivers; but I think it desirable to assume that Crown rights exist in India even in respect of such streams as the Choya. The preamble of the Canal Act asserts the right of Government "to use and control for public purposes all rivers and streams flowing in natural channels;" whilst Section 8 of Act I of 1868 provides that the recital contained in any Act shall be deemed to be *primâ facie* evidence of the truth of the fact receited.

Whether a suit could be brought at all in the name of the Secretary of State for India.

37. I think, if it is considered desirable to remove the bands, the proper course to adopt in the case of those which have been in use for 20 years and upwards will be to take action under Para II of the Canal Act; but this course would involve the payment of compensation, and the bill would, I am afraid, be a very heavy one.

The adoption of the course laid down in Part II of the Canal Act for the removal of old bands would involve payment of compensation.

38. The crops raised on lands irrigated by the Choya are rice and wheat. The land is productive, and the crops are very valuable.

Crops raised on lands irrigated by the Choya.

39. If the bands are removed it will be impossible to raise wheat or rice in the areas entered in Deputy Commissioner of Hissár's paragraph 2. Compensation for this loss alone would constitute a heavy bill; but this would not, I think, be all Government would have to pay.

The removal of the bands would render the raising of those crops impossible.

40. The areas entered in Deputy Commissioner of Hissar's paragraph 2 are those *directly* irrigated from the bands, but in addition to the above a considerable extent of irrigated land is more or less affected by these bands. The actual irrigated area of course fluctuates from year to year, and depends on the supply of water in the Choya, but the following is, in the opinion of the Tahsildár, the average area irrigated from the Choya in the Fatehábád tahsil *in addition* to the land entered in the Deputy Commissioner's paragraph 2, namely:—

The area irrigated from the Choya.

*Above the Aiálke Bridge.**

		Bigahs.	
Aerwan	...	2,200	
Aiálka	...	300	
Razabád	...	30	
Biswal	...	400	
Zaffarábád	...	2,500	
Bhirana	...	500	
Bisla	...	40	
Majra	...	200	
Shaikupur	...	400	
Fatehábád	...	2,864	
Basti Bhima	...	500	
Muhammadpur	...	500	
Chundo	...	500	
			10,934
Below the bridge and between the bands	...		700

The advantages resulting from the existence of bands in the Choya, and the disadvantages which would result from their removal.

41. What the fall of the bed of the lower Choya is I do not know, but it is probably less, and not greater, than that of the upper Choya, which is 1 in 10,000 feet. Now it will, I think, be sufficiently apparent, and will not require detailed explanation to show, that the effect of a solid band which at its point of contact with the stream raises the surface level of the latter 3 or 4 feet must have the effect of raising the surface level of the water proportionately for a considerable distance up stream, and consequently water-courses at a considerable distance above the band will, so long as the band is retained, receive more water than they would do were the bands removed. The greater the head of water at the mouth of the water-course, the greater the initial velocity of the water entering it, and consequently, as the freshes of the Choya are of limited duration, the greater the total volume of water drawn off from that stream. Hence I think it may be safely concluded that the removal of the bands would not only prevent rice and wheat crops being raised in the areas entered in Deputy Commissioner of Hissár's paragraph 2, but would very seriously diminish the supply of water to some at least of the areas entered in my last paragraph. It would, I think, be impossible without a detailed survey to say exactly what extent of land would be injuriously affected by the removal of the bands, or to what extent this area would be injured—over what area I mean the cultivation of rice and wheat would become *impossible*, and over what area the yield per acre of rice and wheat would be *diminished*. That the area injuriously affected, however, would be great I do not doubt, and that the total bill for compensation would be heavy seems equally certain.

Whether it would be worth the while of Government to incur the heavy expenditure which an action under the Canal Act would entail.

42. The question which next arises is this—Is it worth the while of Government to incur the very heavy expenditure which would be entailed by taking action under Part II of the Canal Act?

Considerations on which the action of the above point depends.

43. The answer to this depends on the following considerations:—

1. What would be the amount of compensation Government would have to pay?

* The first band is below the Aiálke bridge.

2. Would the gain which would result to the Sirsa zamindárs be sufficient in excess of the loss which would accrue to the Fatehabád zamindárs by the removal of the bands ? and

3. Can the waters of the Lower Choya be profitably utilized without the use of bands ?

To form an estimate of the gain of the Sirsa zamindars resulting from the removal of Fatehabád bands a survey of the Choya and its adjoining lands in the Sirsa district would be necessary.

44. Questions 2 and 3 can best be answered by a Canal Officer. The Choya has been, I believe, surveyed down to Fatehabád in connection with the storage-of-water scheme. What the probable discharge at the point below Fatehábád, where the Choya enters the Sirsa district, would be in ordinary years were the Fatehabád bands removed, might perhaps be approximately calculated without any fresh observations on the spot during the rains. A survey, however, of the Choya and its adjoining lands in the Sirsa district would probably be required before an estimate could be framed of the extent to which the Sirsa zamindárs would benefit by the removal of the Fatehabád bands.

The question of the benefit to the Sirsa zamindárs on the one hand, and the loss to the Fatehabád zamindars on the other.

45. It may be that the benefit which would result to the Sirsa zamindárs would be sufficiently great to justify the demolition of the bands and the expenditure of the money required for compensation ; but on the other hand, it might turn out that the loss to the Fatehabád zamindárs would be altogether out of proportion to the gain which would result to those of Sirsa.

Mr. Hammer's remarks regarding the area irrigated from, and the maximum discharge of, the Choya.

46. Mr. Hammer, in paragraph 55 of his report on the water-storage scheme, wrote as follows :—

"The area irrigated at present from the * * Choya Nadi in the Hissár and Sirsa districts is according to official returns as follows :—

Hissár district	...	...	11,590 acres.*
Sirsa district ...	...	...	4,073 "

"Taking the total maximum discharge of the Choya at 622 million cubic feet as observed by Captain Baker."

[This it must be remembered is the *total* amount entering the mouth of the Choya during the *whole season.*] "The consumption per acre † inclusive of loss by evaporation and other causes is 39,073 cubic feet, equalling a rain-fall of 10·68 inches for the whole area *at present assessed at irrigated rates.*"

* * * * * *

"This quantity would, however, be only available in *exceptionally* favorable seasons similar to the one in which Captain Baker registered the floods of the river."

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* This is apparently the area assessed at settlement. These figures are under the estimate of present irrigated area framed by the Tahsíldár—*vide* my paragraph 40. According to the latter, the area irrigated by the Choya in the Fatehabád tahsíl alone is 15,886 bígahs, or 9,926 acres. To this must be added the area irrigated in the Barwála tahsíl. The Choya traverses the latter tahsíl for about 14 miles as the crow flies.

† Mr. Hammer does not seem to have taken into consideration the land irrigated from the Choya in the Patiála State between Phúlad and the boundary of the Hissár district, a distance of about 5 miles as the crow flies ; nor on the other hand, to have estimated the amount of water the Rangoi would discharge if it were in working order.

47. Now the bands complained of by the Deputy Commissioner of Sirsa, as will be seen from the tracing he has furnished, are at the tail end of the Choya, in the Hissár district. It seems to me therefore doubtful whether, after the water absorbed by irrigation during the course of the Choya for about 50 miles above the bands is deducted from the total supply of *ordinary* years, sufficient would remain to be of much use to the Hissár zamindárs at the tail end of the stream without bands to raise the level of the water.

The bands complained of by the Deputy Commissioner of Sirsa being at the tail end of the Choya, by their removal sufficient water would not be left in the Nala to be of much use to the Hissár zaimindárs.

48. A few days ago, as I wished to see the Lower Choya during the rains, I rode up the stream from the border of the Sirsa district to the Aialke bridge, on the Rattia and Fatehabád road, and saw all the bands.

Inspection of the bands by Commissioner.

49. This section of the Choya, about 14 miles in length, consists of a gentle depression which, but for the comparative luxuriance of grass in it, would be often undistinguishable from the adjoining jangle. For some 3 miles or so from the Sirsa border, with the exception of an occasional small and shallow pool, I found no water in the Choya. The actual stream, for about 2 or 3 miles above the last band, is a shallow little ditch about 2 feet wide and as many inches deep, thinly fringed with grass.

What Commissioner saw of the Choya.

50. As I proceeded up stream the Choya became more thickly clothed with rank grass, the bed gradually became more swampy, and the central stream more decided. Above the first band, (No. 14 of Deputy Commissioner's list), about half a mile or a mile from the Aialke bridge, the central stream had swelled to a width of two yards, but it was not more than knee deep.

Further account of the Choya up stream.

51. I found nearly all the Hijraon Khurd bands in tact, but all those of Hijraon Kalán had openings in the centre of them, through which the water in the stream could freely pass.

Nature of the Hijraon Khurd and Hijraon Kalán bands.

52. I understand that the practice is for each band to be closed in succession for a certain time when water comes down the stream, after which it is opened and the water passed on to the band below.

The practice of closing and opening the bands in succession.

53. Three or four of the bands are solid substantial ones, but others (some had been completely washed away), are very petty affairs. No. 2 of Deputy Commissioner of Hissár's list, for instance, being a thin "dol" or ridge of earth thrown across the bed of the Choya to collect a *little* water for *drinking purposes*.

Commissioner's opinion of the bands.

54. In conclusion I recommend that if Government should contemplate the demolition of the bands, that a professional survey and report should be made before any action be taken.

Professional survey and report should be made before any action is taken to remove the bands.

55. In the absence of the information on certain points indicated above, which a professional survey and report would supply, my opinion is only a provisional one. According to my present lights, however, I am disposed to think that the best thing Government can do is to let matters rest very much as they are.

According to existing information, Commissioner is of opinion that the best thing to be done is to let matters rest much as they are.

56. The removal of the bands would injure cultivation in the Choya villages of the Fatehabád tahsíl to a serious extent. The loss to the zemindárs of many villages would be very serious, whilst I doubt whether the consequent gain to the Sirsa zemindárs would be at all in proportion to the loss those of Fatehabád would sustain.

What the effect of the removal of the bands would be.

57. The removal of the bands would entail on Government a great expenditure, the full extent of which it would be difficult to calculate before hand. The area affected might be determined by a detailed professional survey, but the idiosyncracies of judges and assessors are unknown quantities.

The loss which their removal would entail on Government.

Nature of Commissioner's recommendations.

58. All that I am at present prepared to recommend is :—

I.—That the erection of new bands in future be rigidly prohibited, and the infringement of the rule be punished criminally by the Magistrate of the district ;

II.—that bands 4, 5, 7, 8, 13 and 14 of Deputy Commissioner of Hissár's list be demolished, that is to say, the owners should be requested to remove them, and if they refuse, Deputy Commissioner should file a civil suit ; and,

III.—Deputy Commissioner might be instructed to arrange with the parties interested a code of rules regulating the time each band is to be kept closed in succession ; a punchayat of leading notables being appointed to enforce those rules on the spot.

59. A complaint, similar to that advanced by the Deputy Commissioner of Sirsa, was made to Government by the Maharája of Bikanér, and the Mahárája's kharita was forwarded to me for report by the Secretary to Government under cover of his No. 736 dated the 27th April last.

Complaint of the Máharája of Bikanér similar to that advanced by the Deputy Commissioner, Sirsa.

60. As the Máharája did not specify any particular bands, I required the Bikanér Vakíl to point out to the Deputy Commissioner of Hissár, in detail, what bands the Máharája objected to ; and it now appears that they are the very bands complained of by the Deputy Commissioner of Sirsa.

Action taken by Commissioner on receipt of the Mahárája's kharita forwarded by Government.

61. As it seems unnecessary for me to write two reports on precisely the same subject, one to the Financial Commissioner and one to the Secretary to Government, I shall feel obliged by the Financial Commissioner passing on this report to Government with any remarks and suggestions he may wish to offer on the subject discussed in it.

Requests the favor of Financial Commissioner passing on this report to Government.

62. With reference to the Máharája of Bikanér's communication, I remark that the Choya leaves the Ghaggar in the Patiála territory, and if its waters were not all absorbed for irrigation in transit, the Choya would again fall into the Ghaggar in the Sirsa district. The Choya does not approach Bikanér in any portion of its course. Under these circumstances the Máharája of Bikanér has only a remote and indirect interest in the Choya ; and I think it would be an inconvenient procedent to admit his right to object to the Fatehabád bands.

Remarks that as the Choya does not approach Bikanér in any portion of its course, to admit the Máharája's right to object to the Fatehabád bands would be an inconvenient precedent.

From Lieutenant-Colonel T. F. Forster, Deputy Commissioner, Hissár, to the Officiating Commissioner and Superintendent, Hissár Division, No. 290, *dated* 14*th August* 1874.

IN compliance with the request contained in your letter No. 160 of the 15th ultimo, in connection with copy of Deputy Commissioner of Sirsa's No. 111, dated 13th idem, and original enclosures, herewith returned as desired, I have the honor to submit the report called for.

2. The subjoined is a statement of the 14 *bands* on the "Choya," regarding which complaint has been made.

No.	Name of band and village.	When erected.	Area irrigated.
		Villages of Hijraon Khurd	
1	Odanwála ...	40 years ago	21 bigahs.
2	Alawála ...	8 ditto	No irrigation.
3	Sangwála ...	20 ditto	21 bigahs.
4	Pittiawála ...	7 ditto	4 ditto
5	Ditto ...	ditto	9 ditto
6	Ahli Janwála ...	22 ditto	200 ditto
7	Ahli Dorwála ...	7 ditto	5 ditto
8	Ditto ...	ditto	No irrigation.
		Villages of Hijraon Kalán	
9	Dhakwála ...	14 years ago	1,200 bigahs.
10	Nurkawála ...	100 ditto	500 ditto
11	Chenkotiwála ...	50 ditto	2,000 ditto
12	Near the Paggi Laddu ...	40 ditto	1,500 ditto
13	Kundhanawála ...	10 ditto	21 ditto
14	Ditto ...	10 ditto	22 ditto

3. The extent of land noted above as under irrigation is not always the same, but fluctuates with the quantity of water that flows down this channel during the monsoons.

4. Band No. 1 is 5 feet high from the bed of the stream, and is the highest; the others vary in height from 2 feet, which is the lowest.

5. It would appear from the vernacular records of this office, embracing enquiries made some years ago, that the erection of bands on this stream has been re-[illegible] prohibited for many years past.

6. I likewise find that on one occasion, in 1865, several persons were fined by Colonel Fendall, the then Deputy Commissioner of Hissár, for this offence, but subsequently that officer remitted the fines imposed, and allowed existing bands to stand, having ascertained that they had been in existence for a very long period.

7. I presume it was on this ground alone that your predecessor, Mr. Naesmyth, consented to the retention of the bands alluded to in 1867, considering that the villages had in a measure a prescriptive right thereto from long usage, and that it would be impolitic to disturb them.

8. There can be no question that the construction of these dams was injurious and unfair *ab initio*, and in no sense can it be said that the Sirsa people tacitly consented to their continuance, as they repeatedly remonstrated against its injustice, and did all they could to have it remedied by constant representations to their own District Authorities.

9. In addition to the evidence of Pir Nabi Baksh, Inspector of Police, recorded by Mr. Wakefield, I also gather from a statement obtained from Ahmad Nabi Khán, who was Náib Tahsíldár and Tahsíldár of Fatehábad from 1843 to 1853, that there were constant disputes about the erection of bands on the "Choya" at that time, and that they were strictly prohibited, but that the order was even then evaded on the sly.

10. The existing bands covered by Mr. Naesmyth's order are, Nos. 1, 3, 6, 9, 10 and 11, and are of more or less remote date; in addition to which there were two others allowed which have since been demolished, namely, Lálawála No. 1 in the list submitted with my docket No. 298, dated 13th July 1867, and Bakkiwála, or Paggiwála No. 4 of the same list, both of which had been erected by the villagers of Hijraon Khurd.

11. With the exception of No. 12, said to have been raised 40 years ago, but which I doubt, as it is not on the list of 1867, and those noted in the preceding paragraph, I think all the rest have undoubtedly been erected since that year contrary to orders. By comparing the list of bands of that year with the one now furnished, a remarkable discrepancy will be noticed as to the alleged period of their erection.

12. The enquiries now made show that the period then stated was grossly exaggerated in many instances; the parties consulted having from interested motives misrepresented the matter. I consider the terms now recorded are much more reliable and correct, and better accord with the vernacular list prepared in 1865, when, as in 1867, only 8 bands were in existence, the oldest of which had been erected 25 years previously, and of the others, 1 was 5 years old, and all the others, 1 and 2 years old at that time.

13. The removal of only a few bands will do but little good to be of any practical use; *all* the obstructions should be destroyed. But however essential and advantageous it may be for the interests of the Sirsa district that this be done, I do not see how it can be legally effected after so long an interval by a mere *ex cathedra* order, except in those instances where the bands are of recent origin, and have been raised since the prohibitory orders of 1867.

14. With reference to the general question of bands, I consider their erection altogether wrong in principle, and I have no hesitation in affirming that, as a rule, no artificial obstructions should be permitted to interfere with the natural flow of a public stream.

15. Amongst others, the plea alleged, that because certain villages in this district subscribed to dig the Rangoi channel (*vide* accompanying map), which you will observe branches off from the Ghaggar a little lower down at Talwara, and falling into the Choya at Kallandargarh, swells that stream, that therefore they have a right to utilize it in any manner they like, is altogether untenable. No doubt, as far as the Rangoi itself is concerned, the subscribers can act as they please with the consent of the other shareholders of that channel, but after its union with the Choya they have clearly no right to divert the water for their own profit.

16. Nor do I see any force in the argument said to be advanced by the villagers of Hijraon Kalán and Hijraon Khurd that, if these bands were removed, an unduly large portion of water would find its way to Sirsa, and their villages being on higher ground would be thus denuded of a proper share.

17. Such of course is the result to be naturally expected from the gradient of slope in all streams, whether perennial or temporary, and offers no valid excuse to the villages situated higher up to intercept the water for their own special benefit.

18. The villages in both districts must be content to enjoy the advantages, and put up with the disadvantages of their relative positions along the channel. It should likewise be borne in mind that those in this district being much closer to the source get the first supply of water. Should the quantity sent down by the monsoon floods be small, they monopolize the whole, as the channel at low water goes no further than Fattehábad, and sometimes not even so far. It is obvious therefore that, if in addition to this benefit these villages are also permitted to dam the stream at various points, they completely cut off any chance of supply from the less fortunately situated villages at the tail.

19. Indirectly also the construction of bands is injurious, as there is no doubt that they contribute to the gradual silting up of the stream, a result which has to a certain extent actually taken place already, and which will hereafter increase to the serious detriment of irrigation.

20. Referring to your docket No. 106, dated 2nd May last, and copy of Panjab Government No. 736, dated 27th April, and its annexure in continuation of your letter under acknowledgment, I beg to state that the bands referred to therein, regarding the erection of which complaint is made by the Máharâja of Bikanér, are identically the same.

21. From the sketch map submitted it will be seen that the Choya, after traversing portion of the Hissár and Sirsa districts, again unites with the Ghaggar at Gudrawali in that district. Nowhere does this branch of the Ghaggar cross the Bikanér ilâqua, although the main stream does so further on. That State, therefore, is only indirectly affected by the diminution caused in the supply of water intercepted by the bands on the Choya, and which it is alleged would otherwise flow into the Ghaggar and augment that stream.

22. In point of fact, however, owing to the partial silting of the Choya, even if the bands in this district were removed, the water in this channel would only rarely in times of high flood reach the Sirsa district, where it would most probably be used up for purposes of irrigation long before it could re-unite with the Ghaggar to benefit Bikanér.

23. But be that as it may, even if the removal of the bands here is not likely to do the Bikanér State any substantial good, at least all existing cause of dissatisfaction will have been removed. In the adjustment, therefore, of this matter I consider the rights and interests of that territory also require to be carefully considered in conjunction with Sirsa.

From Major T. F. Forster, Officiating Deputy Commissioner, Hissár, to the Commissioner and Superintendent, Hissár Division, No. 298, dated 13th July 1867.

With reference to his No. 239, dated 26th ultimo, has the honor to submit a tabular statement, showing the number of "bands" now in existence on the Choya nala, and when and under what circumstances each was formed, and the objections to their removal.

Statement showing the number of Bands in existence on the Choya Nala, their locality, and when they were formed in the Hissár District.

No.	Names of villages through which it passes.	No. of Bands in existence.	Description and locality of the Bands.	When formed.	Remarks by Deputy Commissioner.
					Tahsil Barwála.
1	Rasúlpur.	1	Konalwála.	About 40 years ago.	This band was built to secure a better supply of water, as the land was high and the fields could not be properly irrigated. The lands attached to 4 villages are watered by this arrangement, and should the bands be removed the crops would suffer.
2	Dharsul Kalán.	1	Kuiwála.	About 35 years ago.	In this village also the band was built for a similar reason. As the land is high, if the band be prohibited, many of the fields could not be properly irrigated, and the crops would suffer accordingly.
3	Mai Mudh.	1	Khandwa.	50 years ago.	Ditto ditto ditto.
4	Dhere.	1	Rasteywála.	40 years ago.	The lands of 3 villages are irrigated by the erection of this band, and they would suffer by its removal, as the surrounding lands are high. Recently a small cut has been dug from the "Rangoi" by which means also certain fields are watered.
5	Hindalwála.	2	Khandwála. Guddawála.	20 years ago. 6 years ago.	These bands are also reported to have been erected to facilitate irrigation. If removed, the crops would suffer, as there are no other means of watering the fields.
6	Chuharpur.	1	Khureywála.	6 years ago.	Built by zamindárs; but was only allowed to remain for one year, and was removed by order of the District Authority. Marks still remain. If there is an overflow of the nala, the neighbouring fields can be irrigated by this means, but not otherwise.
7	Nurail.	1	Nurailwála.	35 years ago.	This was formerly a village in the Patiála Territory. The band which is an old one was erected by Jats for the irrigation of the lands of 4 neighbouring villages. Although prohibitory orders have from time to time been issued, yet the band has been built up on the sly, as there is no other method of supplying the high surrounding fields with an adequate quantity of water.

Tahsíl Fatehábád.

1	Hijraon Kalán.	3	1 Jankotiwála.	About 100 or 125 years ago.	It appears that all the bands on the nalla in this Tahsíl are very ancient, and are reported to have been erected to arrest the water for purposes of local irrigation, without which device the stream would flow onwards to the Sirsa district. The water thus stopped is turned off into different smaller channels cut in various directions along the neighbouring fields.
			2 Balliwála.	About 150 years ago.	
			3 Medewála.	About 200 years ago.	
2	Hijraon Khurd.	5	1 Lalawála. 2 Aliwála.	About 200 years ago.	These bands were built by permission of the father of Nawáb Amír Muhammad, a "Rais" of Fatehábád, and have been maintained ever since. If these bands be removed, it would interfere seriously with the proper irrigation of extensive lands.
			3 Sadderwála. 4 Bhekeywála.	About 100 years ago.	
			5 Oadawála.	About 200 years ago.	

GENERAL REMARKS.

It will be seen that with the exception of Guddawála and Khureywála in the Barwála tahsíl where the bands date 6 years back, all the rest of the bands are old, and those in the Fatehábád tahsíl are very ancient. It would not, therefore, in my opinion, be expedient to interfere with a right, however questionable in the abstract, which has been sanctioned by such long established usage. The practice, however, should be discouraged, and the erection of new bands should be strictly prohibited in future.

HISSAR:
The 18th July 1867.

(Sd.) T. F. FORSTER,
Offg. Deputy Commissioner.

From Major T. F. Forster, Officiating Deputy Commissioner, Hissár, to the Commissioner and Superintendent, Hissár Division, No. 313, dated 24th July 1867.

With reference to the remarks contained in your letter No. 262 of the 17th instant, calling for a further report on the subject of the Choya nala, I now beg to supply the information required.

2. It would appear from the statement of the Tahsildár of Fatehábád that he is unable to discover from the papers available at the tahsil, whether the bands alluded to were removed in 1855, A. D., or not. In 1865 the removal of the bands was directed by my predecessor, Major Fendall, but on further inquiry and reconsideration of the matter that order was cancelled on the grounds that these dams were ancient and should not therefore be disturbed.

3. From the supplementary report submitted by the Tahsildár of Barwála, I gather that the erection of all bands in his pergannah, whether new or old, have always been interdicted. It appears, however, that this order has been evaded, and that notwithstanding the prohibition bands have been secretly erected for irrigational purposes. Orders have also been issued from time to time for the removal of these obstructions, and occasionally parties have been punished for infringing established rules. At present *all the bands* in his jurisdiction are removed, although the marks, where they have existed, are still visible, but the Tahsildar observes that if the prohibitory order is strictly enforced, the "sotur" lands will suffer for want of proper irrigation, except when there is an exceptional and casual overflow of the canal during the rains, and which would thus preclude the cultivation of any but "baráni" crops.

4. As it is clear that the Barwâla bands have been built *in spite of repeated prohibitions*, and that at present none are standing, I am of opinion that there appears to be no sufficient reason assigned for their re-establishment. It is quite true that the crops of some people may suffer, but no parties have a right to such exclusive privileges, and it is obvious, if *all* were to do so, the water-supply would be cut off from its source.

From Major T. F. Forester, Officiating Deputy Commissioner, Hissár, to the Commissioner and Superintendent, Hissár Division, No. 319, dated 29th July 1874.

Begs to state in reply to his docket No. 278 of the 26th current, that, as already stated in the remarks recorded in the statement which has been submitted to him, the Deputy Commissioner does not think it is expedient to interfere with the existing bands in the Fatehábád pergannah. Whether these bands have really been in existence for such very lengthened periods seems, *primâ facie*, a questionable matter; but there is no doubt, from information gained from the "oldest inhabitants" of the locality, that the bands have been erected a great many years ago; it would, therefore, be a hardship if they were now disallowed. On no account, however, should the erection of any other bands be permitted.

From J. Naesmyth, Esquire, Commissioner and Superintendent, Hissár Division, to the Deputy Commissioner of Sisa, No. 113, dated 31st July 1867.

Referring to your letter No. 55, dated 18th March last, I beg to state that it has been now definitely arranged that bands are not henceforth to be constructed on the "Choya nala." Those existing in the Fatehábád pargannah are, it is ascertained, of very long standing, and their premptory removal would be impolitic and unjust. Those in the Barwála pargannah of Hissár, which are of more recent construction, and which appear to have fallen into disrepair, will not be renewed.

2. This will I trust, to some extent at least, remedy the evil complained of by the Sirsa zamindárs. It is to be regretted that the matter has been so imperfectly attended to of late years by the District Authorities; it is one of considerable importance and must not again be lost sight of.

From C. M. Rivaz, Esquire, Officiating Under-Secretary to Government, Panjab, to the Officiating Secretary to Financial Commissioner, Panjab, No. 1731½ *dated Lahore, 8th October* 1874.

I AM directed to return the enclosures to your letter No. 1086, dated the 9th instant, regarding the dams on the Choya stream in the Hissár district.

2. The report of the Commissioner of Hissár contains a clear and comprehensive account of the case in all its bearings, and in Colonel McMahon's conclusions and his suggestions for the future treatment of the questions which have been raised the Lieutenant-Governor concurs, with the modification proposed by the Financial Commissioner in the 13th paragraph of your letter under reply.

3. In regard too to the claim of the Bikanér State His Honor agrees in the views expressed in the concluding paragraph of Colonel McMahon's report.

4. A selection of this correspondence may be printed, as suggested by the Financial Commissioner.